

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 19,0 n5
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 640 114
 Injection pump
 Pump designation : PE12A95D610LS2590
 EP type number : 0 410 690 995
 Governor
 Governor design. : RQV300...1150AB1086-
 1L
 Governor no. : 0 420 212 221

Customer-spec. information
 Customer : KHD

Engine : F12L413F

1st version kW : 247.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : ?

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 600
 travel mm : 1.40...1.50

2nd speed rpm : 615
 travel mm : 1.70...1.90

3rd speed rpm : 665
 travel mm : 2.80...3.00

4th speed rpm : 1180
 travel mm : 8.50...8.60

5th speed rpm : 1225
 travel mm : 9.30...9.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1165

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1130

Del.quantity : 84.0...86.0
1000 : (82.0...88.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 8.90
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 83...91

Testing:
Speed rpm : 300
Minimum rack trave: 10.50
Speed rpm : 600
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 600...670

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1130
Rack travel in m: 9.90...10.00
2nd speed rpm : 800
Rack travel in m: 10.80...10.90
3rd speed rpm : 945
Rack travel in m: 10.60...10.70
4th speed rpm : 1030
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 90.5...93.5
1000 s: (88.0...96.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

A02

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1170...1180

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 p8
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 648 118

Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQV750AB1041L
Governor no. : 0 420 212 109

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 117.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 720

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm3 : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 720

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 21...29

Testing:

1st rack travel in: 9.60

Speed rpm : 753...758

2nd rack travel in: 4.50

Speed rpm : 775...785

START CUT-OUT

Speed 1/min : 680 (700)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 753...758

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 116.5...126.5
1000 s: (113.5...129.5)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 15,8 c3
 Edition : 17.10.90
 Replaces : 15.8.89
 Test oil : ISO-4113
 Combination no. : 0 400 649 244
 Injection pump
 Pump designation : PE10A95D610/4LS2452
 EP type number : 0 410 699 998
 Governor
 Governor design. : RQV300...1100AB1055-
 1L
 Governor no. : 0 420 212 215

Customer-spec. information
 Customer : KHD

Engine : F10L413F

1st version kW : 198.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1-10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm3/ : 1.2...1.8
 100 s: (0.9...2.0)

Spread cm3 : 0.5
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 0.70...1.20
 2nd speed rpm : 395
 travel mm : 1.50...2.00
 3rd speed rpm : 820
 travel mm : 554.00...5.90
 4th speed rpm : 1150
 travel mm : 8.00...8.50
 5th speed rpm : 1450
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 86.0...88.0
 1000 : (84.0...90.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 8.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 57...65

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 450...500

TORQUE CONTROL
Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.60...9.70
2nd speed rpm : 750
Rack travel in m: 10.50...10.60
3rd speed rpm : 910
Rack travel in m: 10.30...10.50
4th speed rpm : 1000
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del. quantity cm³/ : 95.5...98.5
 1000 s: (93.0...101.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
 1000 s: (117.0...133.0)
Rack travel in mm : 13.50...14.20

Remarks:

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 r1
 Edition : 15.08.89
 Replaces : 7.2.89
 Test oil : ISO-4113

Combination no. : 0 400 678 040

Injection pump
 Pump designation : PE8A95D410LS2451
 EP type number : 0 410 698 988
 Governor
 Governor design. : RSV300...1325A8C1002
 L
 Governor no. : 0 420 232 310

Customer-spec. information
 Customer : KHD

Engine : F8L413F

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 9.1...9.3
 100 s: (8.9...9.5)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.9...1.5
 100 s: (0.6...1.7)

Spread cm³ : 0.5
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Del.quantity : 91.5...93.5
 1000 : (89.5...95.5)

Spread cm³ : 3.00
 1000 : (6.00)

RATED SPEED

1st version

Control lever
 position degrees: 109...117

Testing:

1st rack travel in: 8.70
 Speed rpm : 1365...1375

2nd rack travel in: 4.00
 Speed rpm : 1390...1420

4th rack travel in: 1575
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.50

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 310...370
Speed rpm : 700
Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1325
Rack travel in m: 9.70...9.80
2nd speed rpm : 500
Rack travel in m: 10.00...10.10

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 116.5...127.5
1000 s: (113.5...130.5)
Rack travel in mm : 14.00...14.40

HIGH IDLE

1st version
Rack travel in mm : 3.90...4.10
Spread cm3 : 10.00
1000 s: (-)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 e 3
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 280
Injection pump
Pump designation : PES6A80D410RS2085Z
EP type number : 0 410 886 043
Governor
Governor design. : RQV300...1475AB532DL
Governor no. : 0 420 214 056

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 74.0
Rated speed : 2950

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1450

Rack travel in mm : 7.90...8.00

Del.quantity cm3/ : 4.3...4.4

100 s: (4.1...4.5)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.6)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1495

travel mm : 8.50...8.60

2nd speed rpm : 950

travel mm : 5.00...5.30

3rd speed rpm : 750

travel mm : 3.90...4.40

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1495

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1450

Del.quantity : 43.0...44.0

1000 : (41.5...45.5)

Spread cm3 : 2.00

1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 99...117

Testing:
1st rack travel in: 6.90
Speed rpm : 1505...1515
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION
Speed rpm : 430...540

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1450
Rack travel in m: 7.90...8.00
2nd speed rpm : 500
Rack travel in m: 9.10...9.20
3rd speed rpm : 770
Rack travel in m: 8.80...9.00
4th speed rpm : 1000
Rack travel in m: 8.10...8.40

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 6.90
Speed rpm : 1505...1515

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 12.90...13.30

Remarks:

A10

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 2
Edition : 31.08.90
Replaces : 19.3.90
Test oil : ISO-4113

Combination no. : 0 400 846 538

Injection pump
Pump designation : PES6A95D320RS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1204R
Governor no. : 0 420 201 640

Customer-spec. information
Customer : DAF

Engine : DNT 620

1st version kW : 130.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...8.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 800

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70
Speed rpm : 1350...1365
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 540...580

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.60...10.80
2nd speed rpm : 850
Rack travel in m: 12.00...12.40
3rd speed rpm : 935
Rack travel in m: 11.30...11.70
4th speed rpm : 1080
Rack travel in m: 10.80...11.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.10...11.30
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

A12

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm3/ : 74.0...76.0
1000 s: (71.5...78.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 65.5...66.5
1000 s: (63.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1350...1365

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 5
 Edition : 28.09.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 586
 Injection pump
 Pump designation : PES6A95D32ORS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RQ300/1300AB1254R
 Governor no. : 0 420 201 651

Customer-spec. information
 Customer : DAF

Engine : NT 119

1st version kW : 119.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 850

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 850

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1400...1430

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 500...540

TORQUE CONTROL

Dimension a mm : 0.32
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.30...10.40
2nd speed rpm : 850
Rack travel in m: 11.10...11.40
3rd speed rpm : 975
Rack travel in m: 10.70...11.00
4th speed rpm : 1025
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290
Del.quantity cm³/ : 68.0...70.0
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 4,1 b 3
 Edition : 05.11.90
 Replaces : 31.8.90
 Test oil : ISO-4113
 Combination no. : 0 400 864 079
 Injection pump
 Pump designation : PES4A90D320/3RS2659
 EP type number : 0 410 894 028
 Governor
 Governor design. : RSV325...1175AOC2247
 -1R
 Governor no. : 0 420 233 271

Customer-spec. information
 Customer : MM

Engine : TD224/ 4

1st version kW : 72.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 8.0...8.1

100 s: (7.8...8.3)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.0...7.2
 Del.quantity cm³/ : 0.8...1.4
 100 s: (0.6...1.6)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1175
 Aneroid pressure h: 700
 Del.quantity : 80.5...81.5
 1000 : (78.5...83.5)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 93...101

Testing:

1st rack travel in: 9.80
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1250...1280
3rd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.80...10.90
2nd speed rpm : 500
Rack travel in m: 11.70...11.80
4th speed rpm : 920
Rack travel in m: 11.20...11.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 230
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750

Del.quantity cm3/ : 81.0...83.0
1000 s: (78.5...85.5)
Aneroid pressure h: 230
Speed rpm : 600
Del.quantity cm3/ : 72.5...74.5
1000 s: (70.0...77.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 63.0...64.0
1000 s: (61.0...66.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks:
: RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 1
 Edition : 05.11.90
 Replaces : 28.9.90
 Test oil : ISO-4113
 Combination no. : 0 400 876 375
 Injection pump
 Pump designation : PES6A95D32ORS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV300...1300ADC2251
 R
 Governor no. : 0 420 233 272

Customer-spec. information
 Customer : DAF

Engine : NT 119

1st version kW : 119.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : ?

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 103...111

Testing:

1st rack travel in: 9.30
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1385...1415
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1570
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 6.00...6.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
4th speed rpm : 1050
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290
Del.quantity cm³/ : 68.0...70.0
1000 s: (65.5...72.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 q 3
 Edition : 05.11.90
 Replaces : 14.9.90
 Test oil : ISO-4113
 Combination no. : 0 400 876 378
 Injection pump
 Pump designation : PES6A95D320RS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV300...1300AOC2248
 -2R
 Governor no. : 0 420 233 274

Customer-spec. information
 Customer : DAF

Engine : NT 133

1st version kW : 133.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.2
 Del.quantity cm3/ : 0.7...1.1
 100 s: (0.4...1.3)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del.quantity : 76.5...77.5
 1000 : (74.5...79.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:

1st rack travel in: 9.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1390...1420
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1570
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 6.00...6.50
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.50...10.60
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
4th speed rpm : 1070
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 250
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700

Speed rpm : 1290
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.5...77.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 50.5...51.5
1000 s: (48.5...53.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 9
 Edition : 16.08.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 876 380

Injection pump
 Pump designation : PES6A90D410RS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RSV350...1200A1C1163
 L
 Governor no. : 0 420 232 546

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 74.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 5.1...5.2

100 s: (4.9...5.4)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 370.0
 Rack travel in mm : 7.9...8.5
 Del.quantity cm3/ : 1.0...1.2
 100 s: (0.8...1.4)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del.quantity : 51.0...52.0
 1000 : (49.0...54.0)

Spread cm3 : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 109...117

Testing:
 1st rack travel in: 8.30
 Speed rpm : 1240...1245
 2nd rack travel in: 4.00
 Speed rpm : 1267...1280
 4th rack travel in: 1400

Speed rpm : 0.30...1.40

Unimog

LOW IDLE 1

Control lever

position degrees: -3

Setting point w/out bumper spring

Speed rpm : 370

Rack travel in mm : 8.2

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 370

Rack travel in mm : 8.10...8.30

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Dimension a mm : 1.30

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.30...9.40

2nd speed rpm : 600

Rack travel in m: 10.00...10.20

3rd speed rpm : 900

Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm³/ : 41.0...43.0

1000 s: (38.5...45.5)

Speed rpm : 900

Del.quantity cm³/ : 46.0...49.0

1000 s: (43.5...51.5)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 85.0...95.0

1000 s: (82.0...98.0)

Rack travel in mm : 16.80...17.20

LOW IDLE

Speed rpm : 370

Rack travel in mm : 7.90...8.50

Del.quantity cm³/ : 10.0...12.0

1000 s: (8.0...14.0)

Spread cm³ : 2.50

1000 s: (4.50)

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 s
Edition : 05.11.90
Replaces : 6.86
Test oil : ISO-4113

Combination no. : 0 401 840 724

Injection pump
Pump designation : PE12P120A520/4LS3828
EP type number : 0 411 820 714
Governor
Governor design. : RQ250/1150PA739
Governor no. : 0 421 801 279

Customer-spec. information
Customer : MAN

Engine : D2842LE

1st version kW : 529.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 19.5...19.7
100 s : (19.2...20.0)

Spread cm3 : 0.5
100 s : (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.6...7.0
Del.quantity cm3/ : 1.7...2.3
100 s : (1.4...2.6)
Spread cm3 : 0.8
100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 550
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1000
Del.quantity : 195.0...197.0
1000 : (192.0...200.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 550
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.40
Speed rpm : 1220...1235
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 8.30
Speed rpm : 250
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.40...11.50
2nd speed rpm : 750
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.00
2nd pressure hPa : 300
Rack travel in m: 9.20...9.30
3rd pressure hPa : 520
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 200.0...206.0
1000 s: (197.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1220...1235

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...7.00
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7593

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 20,9 t
Edition : 05.11.90
Replaces : 7.86
Test oil : ISO-4113

Combination no. : 0 401 840 725

Injection pump
Pump designation : PE12P120A520/4LS3828
EP type number : 0 411 820 714
Governor
Governor design. : RQV250...1150PA668-7
Governor no. : 0 421 813 481

Customer spec. information
Customer : MAN

Engine : D2842LE

1st version kW : 560.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 20.0...20.2
100 s: (19.7...20.5)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.9...7.1
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 2.00...2.50
2nd speed rpm : 900
travel mm : 6.70...6.90
3rd speed rpm : 1150
travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 200.0...202.0
1000 : (197.0...205.0)

Spread cm3 : 5.00
1000 : (9.00)

Ship

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 10.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1335...1365
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 250
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 400...460

START CUT-OUT

Speed 1/min : 200 (220)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.90...7.10
Del. quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7590

Note remarks

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.30
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 5.30
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 610
Rack travel in m: 12.10...12.20
3rd pressure hPa : 280
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 121.0...124.0
1000 s: (118.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...196.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del.quantity cm³/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 x
Edition : 05.11.90
Replaces : 2.2.90
Test oil : ISO-4113

Combination no. : 0 401 846 910

Injection pump
Pump designation : PE6P110A320LS3851
EP type number : 0 411 816 765
Governor
Governor design. : RQ300/1050PA187-26
Governor no. : 0 421 801 489

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441

1st version kW : 160.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm³ : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm³ : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack trave: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 119.0...125.0
1000 s: (119.0...125.0)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Note remarks

Combination no. : 0 401 846 918

1st version
Speed rpm : 1050
Del.quantity : 122.0...124.0
1000 : (119.5...126.5)
Spread cm3 : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 9.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 83...91

Testing:
Speed rpm : 200
Minimum rack trave: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 119.0...125.0
1000 s: (119.0...125.0)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

B04

Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 a
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 935
Injection pump
Pump designation : PE6P120A320RS3262
EP type number : 0 411 826 797
Governor
Governor design. : RQV300..1050PA232-4
Governor no. : 0 421 813 883

Customer-spec. information
Customer : VME

Engine : TD102 GC

1st version kW : 180.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 3.2...3.7
100 s: (2.9...3.9)
Spread cm3 : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.30...1.70
2nd speed rpm : 500
travel mm : 2.70...3.30
3rd speed rpm : 800
travel mm : 4.90...5.50
4th speed rpm : 1100
travel mm : 7.60...7.70
5th speed rpm : 1180
travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900

Del.quantity : 169.0...171.0
1000 : (166.0...174.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 8.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.20...9.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 160
Rack travel in m: 9.10...9.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 164.0...166.0
1000 s: (161.0...169.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...290.0
1000 s: (256.0...294.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 32.0...37.0
1000 s: (29.5...39.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Loading machine

Note remarks

Combination no. : 0 401 848 805

Testing:

1st rack travel in: 9.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 200
Minimum rack trave: 9.20
Speed rpm : 300
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 106.0...112.0
1000 s: (103.5...114.5)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 L 3
 Edition : 05.11.90
 Replaces : 2.1.90
 Test oil : ISO-4113
 Combination no. : 0 401 848 806
 Injection pump
 Pump designation : PE8P110A320LS3846-1
 EP type number : 0 411 818 719
 Governor
 Governor design. : RQ300/1050PA187-28
 Governor no. : 0 421 801 492

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0
 Rack travel in mm : 6.3...6.9
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.4)

Spread cm3 : 0.6
 100 s: (1.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm3 : 8.50

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack trave: 8.20
Speed rpm : 300
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 390...430

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 119.0...125.0
1000 s: (119.0...125.0)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r
Edition : 05.11.90
Replaces : 20.7.90
Test oil : ISO-4113

Combination no. : 0 401 848 808

Injection pump
Pump designation : PE8P110A320LS3846-1
EP type number : 0 411 818 719
Governor
Governor design. : RQV300...1050PA884-5
Governor no. : 0 421 813 831

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

2nd speed rpm : 440
travel mm : 2.70...3.20

3rd speed rpm : 730
travel mm : 4.70...5.20

4th speed rpm : 1110
travel mm : 8.00...8.50

5th speed rpm : 1360
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 122.0...124.0
1000 : (119.5...126.5)
Spread cm³ : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 85...93

Testing:
Speed rpm : 200
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.30...6.90

CONSTANT REGULATION
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 119.0...125.0
1000 s: (119.0...125.0)
Spread cm³ : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r 1
Edition : 05.11.90
Replaces : 19.6.90
Test oil : ISO-4113

Combination no. : 0 401 848 810

Injection pump
Pump designation : PE8P110A320LS3846-1
EP type number : 0 411 818 719
Governor
Governor design. : RQV300...1050PA884-7
Governor no. : 0 421 813 859

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442

1st version kW : 195.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.1...11.3

100 s: (10.8...11.5)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.40

2nd speed rpm : 480
travel mm : 3.10...3.60

3rd speed rpm : 770
travel mm : 5.60...6.10

4th speed rpm : 1100
travel mm : 8.70...9.20

5th speed rpm : 1310
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 111.0...113.0
1000 : (108.5...115.5)
Spread cm3 : 8.50
1000 : (13.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 25...93

Testing:
Speed rpm : 200
Minimum rack travel: 8.90
Speed rpm : 300
Rack travel in mm : 7.00...7.60

CONSTANT REGULATION
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 106.0...112.0
1000 s: (103.5...114.5)
Spread cm3 : 11.00
1000 s: (14.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MM 10,8 a2
 Edition : 17.10.90
 Replaces : 6.4.88
 Test oil : ISO-4113
 Combination no. : 0 401 876 334
 Injection pump
 Pump designation : PE6P120A320RS468
 EP type number : 0 411 826 128
 Governor
 Governor design. : RSUV300...900POA320
 -1
 Governor no. : 0 421 829 107

Customer-spec. information
 Customer : MM

Engine : D-TBD 234 V6

1st version kW : 300.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 6- 3- 2- 5- 4

Phasing : 0-90-120-210-240-330
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 13.70...13.80
 Del.quantity cm3/ : 24.9...25.1
 100 s: (24.6...25.4)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Del.quantity : 249.0...251.0
 1000 : (246.0...254.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 116...124

Testing:
 1st rack travel in: 12.70
 Speed rpm : 940...950

2nd rack travel in: 4.00
Speed rpm : 965...995
4th rack travel in: 1130
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 320...380

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.70...13.80
2nd speed rpm : 450
Rack travel in m: 13.70...13.80
3rd speed rpm : 280
Rack travel in m: 14.90...15.50

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 940...950

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 c1
Edition : 05.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 776

Injection pump
Pump designation : PE6P120A320RS3206-2
EP type number : 0 411 826 784
Governor
Governor design. : RSV250...900P4A374-10
Governor no. : 0 421 833 345

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : T1D 121 LP

1st version kW : 295.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.00...12.10
Del.quantity cm3/ : 29.8...30.0
100 s: (29.5...30.3)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 2.3...2.9
100 s: (2.0...3.2)
Spread cm3 : 0.5
100 s: (0.7)

GUIDE SLEEVE POSITION
Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1500
Del.quantity : 298.0...300.0
1000 : (295.0...303.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:

1st rack travel in: 11.00
Speed rpm : 945...955
2nd rack travel in: 4.00
Speed rpm : 970...1000
3rd rack travel in: 4.00
Speed rpm : 985...1015
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 48...56
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.9
Speed rpm : 250
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.10...7.30
2nd pressure hPa : 1000
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 135.5...137.5
1000 s: (132.5...140.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 945...955

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 265.0...295.0
1000 s: (261.0...299.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 b3
 Edition : 05.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 777
 Injection pump
 Pump designation : PE6P120A320RS3261
 EP type number : 0 411 826 796
 Governor
 Governor design. : RSV250...1100POA374-11
 Governor no. : 0 421 833 346
 Customer-spec. information
 Customer : PENTA
 Engine : TAMD 102

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : ?

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1500

Del.quantity : 258.0...260.0

1000 : (255.0...263.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Testing:

1st rack travel in: 11.20

Speed rpm : 1120...1130

2nd rack travel in: 4.00
Speed rpm : 1170...1200
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 41...49
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 390...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 270
Rack travel in m: 9.00...9.10
3rd pressure hPa : 1000
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 900
Del. quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100

B20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 a
Edition : 17.10.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 876 779

Injection pump
Pump designation : PE6P110A320LS3835-2
EP type number : 0 411 816 761
Governor
Governor design. : RSV675...1025POA820-11
Governor no. : 0 421 833 347

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 441

1st version kW : 164.0
Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 675.0
Rack travel in mm : 3.4...4.0
Del.quantity cm3/ : 1.2...1.8
100 s: (0.9...2.0)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 138.0...140.0
1000 : (135.5...142.5)
Spread cm3 : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 12.00
Speed rpm : 1035...1045
2nd rack travel in: 4.00
Speed rpm : 1065...1083
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 675
Rack travel in mm : 3.7

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 675
Rack travel in mm : 3.40...4.00
Rack travel in mm : 2.00
Speed rpm : 680...720

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm3/ : 135.0...139.0
1000 s: (132.0...142.0)
Spread cm3 : 6.00
1000 s: (8.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1035...0

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a44
 Edition : 05.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 083
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQ300/950PA813-17
 Governor no. : 0 421 801 546

Customer-spec. information
 Customer : MAN

Engine : D2866 LF 07

1st version kW : 213.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.80
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1020...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 355...395

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 9.80...9.90
2nd speed rpm : 750
Rack travel in m: 10.50...10.70
3rd speed rpm : 850
Rack travel in m: 10.10...10.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.20...10.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 85
Rack travel in m: 9.30...9.40
3rd pressure hPa : 160
Rack travel in m: 9.70...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950

Del.quantity cm3/ : 181.0...185.0
1000 s: (178.0...188.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7086

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 3
 Edition : 05.11.90
 Replaces : 1.2.90
 Test oil : ISO-4113

Combination no. : 0 402 046 300

Injection pump
 Pump designation : PES6P120A32ORS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1100PA495-5
 Governor no. : 0 421 813 446

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045

1st version kW : 191.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm3/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.0...4.4

Del.quantity cm3/ : 1.9...2.5
 100 s: (1.6...2.8)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20

2nd speed rpm : 450
 travel mm : 3.40...3.80

3rd speed rpm : 850
 travel mm : 6.10...6.30

4th speed rpm : 1100
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 162.0...164.0

1000 : (159.0...167.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 8.00
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...8.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 285...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 220
Rack travel in m: 8.60...8.70
3rd pressure hPa : 195
Rack travel in m: 8.10...8.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 150.0...156.0
1000 s: (147.0...159.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 102.0...104.0
1000 s: (99.0...107.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: -1.00
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -4.00...-4.40
Del.quantity cm³/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1
 Edition : 05.11.90
 Replaces : 4.5.90
 Test oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump
 Pump designation : PES6P120A32ORS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...950PA728-1
 Governor no. : 0 421 813 465

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.20...5.60

Del.quantity cm³/ : 2.1...2.7

100 s: (1.8...3.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.30...1.70

2nd speed rpm : 450
 travel mm : 3.30...3.70

3rd speed rpm : 800
 travel mm : 5.60...6.00

4th speed rpm : 950
 travel mm : 6.70...6.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.50
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.40
2nd pressure hPa : 520
Rack travel in m: 11.80...11.90
3rd pressure hPa : 200
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm³/ : 196.0...202.0
1000 s: (193.0...205.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: -1.00
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -6.90...-7.30
Del.quantity cm³/ : 21.0...27.0
1000 s: (18.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f2
Edition : 05.11.90
Replaces : 4.5.90
Test oil : ISO-4113

Combination no. : 0 402 046 791

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...950PA728-4
Governor no. : 0 421 813 678

Customer-spec. information
Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.60...6.00

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.30...1.70

2nd speed rpm : 450
travel mm : 3.30...3.70

3rd speed rpm : 800
travel mm : 5.60...6.00

4th speed rpm : 950
travel mm : 6.70...6.90

5th speed rpm : 1500
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.30
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.50
2nd pressure hPa : 660
Rack travel in m: 12.60...12.70
3rd pressure hPa : 200
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950

Del.quantity cm³/ : 210.0...216.0
1000 s: (207.0...219.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: -1.00
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -7.30...-7.70
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 v 3
 Edition : 17.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 807A
 Injection pump
 Pump designation : PE12P120A320LS7806
 EP type number : 0 412 620 805
 Governor
 Governor design. : RQV400...1065PA835-2
 Governor no. : 0 421 813 603

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 380.0
 Rated speed : 2130

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 19.7...20.0

100 s: (19.4...20.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.00...1.20
 2nd speed rpm : 500
 travel mm : 3.10...3.30
 3rd speed rpm : 1100
 travel mm : 7.30...7.70
 4th speed rpm : 1225
 travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1180
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h : 700
Del.quantity : 197.0...200.0
1000 : (194.0...203.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.70
Speed rpm : 1105...1115
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 400
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 400...600

TORQUE CONTROL
Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1065
Rack travel in m: 12.70...12.90
2nd speed rpm : 975
Rack travel in m: 13.30...13.50
3rd speed rpm : 900
Rack travel in m: 13.90...14.10
4th speed rpm : 800
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 13.70...13.90

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 500
Rack travel in m: 12.60...12.80
3rd pressure hPa : 950
Rack travel in m: 14.10...14.20
4th pressure hPa : 1100
Rack travel in m: 14.20...14.40
5th pressure hPa : -
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 1065
Del.quantity cm3/ : 184.0...188.0
1000 s: (181.0...191.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 800
Del.quantity cm3/ : 212.0...216.0
1000 s: (209.0...219.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm3/ : 174.0...177.0
1000 s: (171.0...180.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

APPLICATION

Rail car



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
Edition : 24.10.90
Replaces : 31.7.90
Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump
Pump designation : PE12P120A520LS7826
EP type number : 0 412 620 817
Governor
Governor design. : RGV350...1150PA870-4
Governor no. : 0 421 813 717

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...4.55)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80
2nd speed rpm : 600
travel mm : 3.30...3.80
3rd speed rpm : 960
travel mm : 5.30...5.80
4th speed rpm : 1206
travel mm : 7.90...8.40
5th speed rpm : 1291
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1275
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 312.0...314.0
1000 : (309.0...317.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.60...9.70
2nd pressure hPa : 1100
Rack travel in m: 13.80...14.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

C07

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm3/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r
Edition : 08.11.90
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump
Pump designation : PES6P110A120RS7214
EP type number : 0 412 716 805
Governor
Governor design. : RQV350...1100PA964-1
K
Governor no. : 0 421 815 253

Customer-spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 20.6...20.8
100 s: (20.4...21.0)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...5.8
Del.quantity cm3/ : 2.8...3.2
100 s: (2.6...3.4)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.00
2nd speed rpm : 450
travel mm : 3.10...3.50
3rd speed rpm : 600
travel mm : 5.10...5.50
4th speed rpm : 1000
travel mm : 8.10...8.30
5th speed rpm : 1200
travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 206.0...208.0
1000 : (204.0...210.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 14.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.70...15.80
2nd speed rpm : 650
Rack travel in m: 13.50...13.90
3rd speed rpm : 1100
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1050
Pressure hPa : 1500
Rack travel mm : 15.70...15.80

Measurement
Speed 1/min : 1050

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 340
Rack travel in m: 10.20...10.30
3rd pressure hPa : 840
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del. quantity cm³/ : 198.5...202.5
1000 s: (196.5...204.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 98.0...102.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 11.40...12.40

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del. quantity cm³/ : 28.0...32.0
1000 s: (26.0...34.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3916627

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 1
 Edition : 08.11.90
 Replaces : 5.10.90
 Test oil : ISO-4113
 Combination no. : 0 402 736 810
 Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964-2
 K
 Governor no. : 0 421 815 254

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 047
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 115...125
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 15.9...16.1
 100 s: (15.7...16.3)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 3.3...3.7
 100 s: (3.1...3.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 0.70...1.10
 2nd speed rpm : 400
 travel mm : 1.40...1.60
 3rd speed rpm : 600
 travel mm : 2.90...3.30
 4th speed rpm : 1300
 travel mm : 7.20...7.40
 5th speed rpm : 1500
 travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del.quantity : 159.0...161.0
 1000 : (157.0...163.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 13.80
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.80...14.90
2nd speed rpm : 800
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 14.80...14.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 415
Rack travel in m: 10.20...10.30
3rd pressure hPa : 740
Rack travel in m: 13.00...13.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 159.0...163.0
1000 s: (157.0...165.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 95.5...99.5
1000 s: (93.5...101.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 33.0...37.0
1000 s: (31.0...39.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : C.D.C. # 3919090

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 1
 Edition : 08.11.90
 Replaces : 5.10.90
 Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-6
 K
 Governor no. : 0 421 815 258

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 18.3...18.5

100 s: (18.1...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm3/ : 2.8...3.2
 100 s: (2.6...3.4)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 700
 travel mm : 5.90...6.30

4th speed rpm : 1200
 travel mm : 9.00...9.20

5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 1200
 Del.quantity : 183.0...185.0
 1000 : (181.0...187.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1405...1435
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 11.60...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 270
Rack travel in m: 9.50...9.60
3rd pressure hPa : 700
Rack travel in m: 12.60...13.00

START CUT-OUT

Speed 1/min : 265 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 168.5...172.5
1000 s: (166.5...174.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 28.0...32.0
1000 s: (26.0...34.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2
 Edition : 08.11.90
 Replaces : 5.10.90
 Test oil : ISO-4113

Combination no. : 0 402 736 816

Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-8
 K
 Governor no. : 0 421 815 264

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 19.0...19.2

100 s: (18.8...19.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm3/ : 2.8...3.2
 100 s: (2.6...3.4)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 190.0...192.0
 1000 : (188.0...194.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.20
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 650
Rack travel in m: 12.50...12.90
3rd speed rpm : 1200
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 260
Rack travel in m: 9.60...9.70
3rd pressure hPa : 710
Rack travel in m: 12.80...13.20

START CUT-OUT

Speed 1/min : 265 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 182.0...186.0
1000 s: (180.0...188.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 28.0...32.0
1000 s: (26.0...34.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C # 3916626

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 21
Edition : 21.09.90
Replaces : 16.05.88
Test oil : ISO-4113

Combination no. : 0 403 446 187

Injection pump
Pump designation : PES6MW100/720RS1129
EP type number : 0 413 406 121
Governor
Governor design. : RGV300...1300MW50-2
Governor no. : 0 420 083 124

Customer-spec. information
Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.6

Del. quantity cm³/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.60...8.80

2nd speed rpm : 1430

travel mm : 9.30...9.70

3rd speed rpm : 300

travel mm : 1.20...1.60

4th speed rpm : 700

travel mm : 3.80...4.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.20
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 51...59
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.60

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 320...530

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 400
Rack travel mm : 9.90...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.60
2nd pressure hPa : 500
Rack travel in m: 10.80...11.10
3rd pressure hPa : 1000
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000

C17

Speed rpm : 600
Del.quantity cm3/ : 83.5...86.5
1000 s: (81.0...89.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.60
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 V
Edition : 05.11.90
Replaces : 01.12.89
Test oil : ISO-4113

Combination no. : 0 403 446 230

Injection pump
Pump designation : PES6MW100/32ORS1185
EP type number : 0 413 406 170
Governor
Governor design. : RQV350...1200MW64-2
Governor no. : 0 420 083 194

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85
: (3.70...3.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.30...8.50

2nd speed rpm : 1460
travel mm : 9.10...9.50

3rd speed rpm : 550
travel mm : 3.10...3.70

4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 800

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 13.00
Speed rpm : 1265...1285
2nd rack travel in: 4.00
Speed rpm : 1415...1425
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 360...450

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 14.00...14.10
2nd speed rpm : 800
Rack travel in m: 14.40...14.60
3rd speed rpm : 1150
Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 265
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.70
2nd pressure hPa : 480
Rack travel in m: 13.30...13.60
3rd pressure hPa : 800
Rack travel in m: 14.40...14.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 83.5...85.5
1000 s: (81.5...87.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1265...1285

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815225C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
Before checking sleeve position,
first adjust latching.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 X
Edition : 28.09.90
Replaces : 16.08.90
Test oil : ISO-4113

Combination no. : 0 403 446 239

Injection pump
Pump designation : PES6MM100/320RS1189
EP type number : 0 413 406 177
Governor
Governor design. : RQV350...1200MW46-21
Governor no. : 0 420 083 201

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 15.2...15.4

100 s: (15.0...15.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.80...10.20
2nd speed rpm : 1250
travel mm : 7.90...8.10
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 900
Del.quantity : 152.0...154.0
1000 : (150.0...156.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:

1st rack travel in: 13.00
Speed rpm : 1280...1300
2nd rack travel in: 4.00
Speed rpm : 1435...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.40...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.20...10.30
2nd pressure hPa : 550
Rack travel in m: 12.50...12.90
3rd pressure hPa : 900
Rack travel in m: 14.00...14.10

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm³/ : 140.0...144.0
1000 s: (138.0...146.0)

Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1280...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815503C91#
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 6
 Edition : 19.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 240
 Injection pump
 Pump designation : PES6MW100/320RS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RQV350...1200MW46-22
 Governor no. : 0 420 083 202

Customer spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 164.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20

2nd speed rpm : 1250
 travel mm : 7.90...8.10

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 900
 Del.quantity : 129.0...131.0
 1000 : (127.0...133.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:

1st rack travel in: 11.00

Speed rpm : 1285...1305

2nd rack travel in: 4.00

Speed rpm : 1405...1415

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 70...78

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.3

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 350

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 275

Rack travel in m: 9.90...10.00

2nd pressure hPa : 550

Rack travel in m: 11.40...11.80

3rd pressure hPa : 900

Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1200

Del.quantity cm³/ : 126.5...130.5

1000 s: (124.5...132.5)

Spread cm³ : 6.50

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 74.0...76.0

1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1285...1305

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 140.0...180.0

1000 s: (137.0...183.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.20...5.40

Del.quantity cm³/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

: IGC #1815521C91#

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 1
Edition : 28.09.90
Replaces : 10.08.90
Test oil : ISO-4113

Combination no. : 0 403 446 241

Injection pump
Pump designation : PES6MM100/320RS1198
EP type number : 0 413 406 188
Governor
Governor design. : RGV350...1200MW46-23
Governor no. : 0 420 083 203

Customer-spec. information
Customer : NAVISTAR

Engine : DT -466

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.5
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.80...10.20
2nd speed rpm : 1250
travel mm : 7.90...8.10
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 900
Del.quantity : 133.0...135.0
1000 : (131.0...137.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:
1st rack travel in: 11.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.00...9.10

Measurement
Speed 1/min : 500

1st pressure hPa : 220
Rack travel in m: 9.70...9.80
2nd pressure hPa : 500
Rack travel in m: 11.30...11.70
3rd pressure hPa : 900
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 128.0...132.0
1000 s: (126.0...134.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815518c91#
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 4
 Edition : 28.09.90
 Replaces : 31.08.90
 Test oil : ISO-4113

Combination no. : 0 403 446 242

Injection pump
 Pump designation : PES6MW100/320RS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RQV350...1200MW46-24
 Governor no. : 0 420 083 204

Customer-spec. information
 Customer : NAVISTAR

Engine : DT -466

1st version kW : 157.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20

2nd speed rpm : 1250
 travel mm : 7.90...8.10

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 900
 Del.quantity : 133.0...135.0
 1000 : (131.0...137.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:
1st rack travel in: 11.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.80...9.90

Measurement
Speed 1/min : 500

1st pressure hPa : 215
Rack travel in m: 10.30...10.40
2nd pressure hPa : 425
Rack travel in m: 11.40...11.80
3rd pressure hPa : 900
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 128.0...132.0
1000 s: (126.0...134.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 88.0...90.0
1000 s: (86.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 12.50...13.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815515C91#
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 X 2
 Edition : 28.09.90
 Replaces : 31.08.90
 Test oil : ISO-4113

Combination no. : 0 403 446 244

Injection pump
 Pump designation : PES6MM100/320RS1189
 EP type number : 0 413 406 177
 Governor
 Governor design. : RQV350...1200MW46-26
 Governor no. : 0 420 083 206

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 16.1...16.3

100 s: (15.9...16.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20

2nd speed rpm : 1250
 travel mm : 7.90...8.10

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 1200
 Del.quantity : 161.0...163.0
 1000 : (159.0...165.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:

1st rack travel in: 13.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1430...1440
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 14.50...14.60
2nd speed rpm : 1200
Rack travel in m: 14.10...14.20
3rd speed rpm : 1050
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.90...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : 275
Rack travel in m: 10.40...10.50
2nd pressure hPa : 585
Rack travel in m: 12.90...13.20
3rd pressure hPa : 1200
Rack travel in m: 14.50...14.60

START CUT-OUT

Speed 1/min : 280 (290)

D01

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 146.0...150.0
1000 s: (144.0...152.0)
Spread cm3 : 6.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.5...63.5
1000 s: (59.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...190.0
1000 s: (147.0...193.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815520C91#

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 A
Edition : 17.10.90
Replaces : 10.08.90
Test oil : ISO-4113

Combination no. : 0 403 446 245

Injection pump
Pump designation : PES6MM100/32ORS1204
EP type number : 0 413 406 192
Governor
Governor design. : RQV350...1350MW45-27
Governor no. : 0 420 083 207

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-360

1st version kW : 138.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 8.20...8.60

2nd speed rpm : 1350
travel mm : 7.40...7.60

3rd speed rpm : 500
travel mm : 2.50...3.10

4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 900
Del.quantity : 112.0...114.0
1000 : (110.0...116.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:
1st rack travel in: 9.80
Speed rpm : 1415...1435
2nd rack travel in: 4.00
Speed rpm : 1510...1520
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.70...8.80

Measurement
Speed 1/min : 500

1st pressure hPa : 210
Rack travel in m: 9.20...9.30
2nd pressure hPa : 410
Rack travel in m: 10.10...10.50
3rd pressure hPa : 900
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1350
Del.quantity cm³/ : 107.5...111.5
1000 s: (105.5...113.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 68.0...70.0
1000 s: (66.0...72.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1415...1435

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (127.0...173.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1815516C91#
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 V
Edition : 14.09.90
Replaces : 02.05.90
Test oil : ISO-4113

Combination no. : 0 403 446 247

Injection pump
Pump designation : PES6MW100/720RS1195
EP type number : 0 413 406 183
Governor
Governor design. : RQV300...1150MW107
Governor no. : 0 420 083 208

Customer-spec. information
Customer : KHD

Engine : BF 6L 913 C

1st version kW : 101.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00

D04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.70...9.80

Del.quantity cm3/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 315.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200
travel mm : 9.80...10.20

2nd speed rpm : 800
travel mm : 5.90...6.10

3rd speed rpm : 450
travel mm : 3.00...3.60

4th speed rpm : 300
travel mm : 1.60...2.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 40...48

Testing:
1st rack travel in: 8.70
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 315
Rack travel in mm : 7.6

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 315
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Dimension a mm : 0.75
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.70...9.80
2nd speed rpm : 800
Rack travel in m: 10.30...10.50
3rd speed rpm : 1030
Rack travel in m: 10.00...10.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.20

Measurement
Speed 1/min : 500
2nd pressure hPa : 450
Rack travel in m: 10.20...10.30
3rd pressure hPa : 1000
Rack travel in m: 10.30...10.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (67.0...73.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...130.0
1000 s: (107.0...133.0)

LOW IDLE

Speed rpm : 315
Rack travel in mm : 7.50...7.70
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test electrically-released starting
quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 F
Edition : 17.09.90
Replaces : 29.06.90
Test oil : ISO-4113

Combination no. : 0 403 446 251

Injection pump
Pump designation : PES6MM100/320RS1202
EP type number : 0 413 406 187
Governor
Governor design. : RQ750MW112
Governor no. : 0 420 082 042

Customer-spec. information
Customer : RVI

Engine : LDR 10

1st version kW : 100.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

D06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 133.5...135.5

1000 : (131.5...137.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 29...35

Testing:

1st rack travel in: 13.50

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 795...805

4th rack travel in: 825

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 70.0...80.0

1000 s: (67.0...83.0)

Rack travel in mm : 19.00...21.00

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 A 2
Edition : 17.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 252
Injection pump
Pump designation : PES6MW100/32ORS1204
EP type number : 0 413 406 192
Governor
Governor design. : RQV350...1350MW46-28
Governor no. : 0 420 083 214

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-366

1st version kW : 127.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 10.80...10.90
Del.quantity cm3/ : 11.2...11.4
100 s: (11.0...11.6)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 8.20...8.60
2nd speed rpm : 1350
travel mm : 7.40...7.60
3rd speed rpm : 500
travel mm : 2.50...3.10
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 900
Del.quantity : 112.5...114.5
1000 : (110.5...116.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 102...110

Testing:

1st rack travel in: 9.80
Speed rpm : 1420...1440
2nd rack travel in: 4.00
Speed rpm : 1520...1530
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.00...8.10

Measurement

Speed 1/min : 500

1st pressure hPa : 205
Rack travel in m: 8.70...8.80
2nd pressure hPa : 395
Rack travel in m: 9.90...10.30
3rd pressure hPa : 900
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1350
Del.quantity cm3/ : 108.0...111.0
1000 s: (105.5...113.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 57.5...59.5
1000 s: (55.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1420...1440

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1816727C91#
Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 X 1
 Edition : 28.09.90
 Replaces : 16.08.90
 Test oil : ISO-4113
 Combination no. : 0 403 446 255
 Injection pump
 Pump designation : PES6MW100/320RS1189
 EP type number : 0 413 406 177
 Governor
 Governor design. : RQV350...1200MW46-30
 Governor no. : 0 420 083 218

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 201.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800
 Rack travel in mm : 14.50...14.60
 Del.quantity cm3/ : 16.1...16.3
 100 s: (15.9...16.5)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20
 2nd speed rpm : 1250
 travel mm : 7.90...8.10
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 1200
 Del.quantity : 161.0...163.0
 1000 : (159.0...165.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:

1st rack travel in: 13.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1430...1440
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 14.50...14.60
2nd speed rpm : 1200
Rack travel in m: 14.10...14.20
3rd speed rpm : 1050
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 260
Rack travel in m: 11.00...11.10
2nd pressure hPa : 650
Rack travel in m: 13.20...13.50
3rd pressure hPa : 1200
Rack travel in m: 14.50...14.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 146.0...150.0
1000 s: (144.0...152.0)
Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 83.5...85.5
1000 s: (81.5...87.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (147.0...193.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1816731C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.

In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 5
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 256
Injection pump
Pump designation : PES6MW100/320RS1198
EP type number : 0 413 406 188
Governor
Governor design. : RQV350...1200MW46-38
Governor no. : 0 420 083 219

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 164.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.80...10.20

2nd speed rpm : 1250
travel mm : 7.90...8.10

3rd speed rpm : 550
travel mm : 3.10...3.70

4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 900

Del.quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 104...112

Testing:

1st rack travel in: 11.00
Speed rpm : 1285...1305
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 235
Rack travel in m: 10.10...10.20
2nd pressure hPa : 485
Rack travel in m: 11.10...11.50
3rd pressure hPa : 900
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 126.5...130.5
1000 s: (124.5...132.5)
Spread cm3 : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 81.5...83.5
1000 s: (79.5...83.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1285...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1816726C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 58
Edition : 17.09.90
Replaces : 16.08.90
Test oil : ISO-4113

Combination no. : 0 403 446 258

Injection pump
Pump designation : PES6MM100/720RS1129
EP type number : 0 413 406 121
Governor
Governor design. : RQV300...1300MW50-8
Governor no. : 0 420 083 222

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 149.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.6

Del.quantity cm3/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
travel mm : 9.40...10.00

2nd speed rpm : 1350
travel mm : 8.50...8.70

3rd speed rpm : 450
travel mm : 2.40...3.00

4th speed rpm : 300
travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 10.50
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.50...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 320...530

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 300
Rack travel mm : 8.30...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 7.40...7.50

2nd pressure hPa : 450

Rack travel in m: 10.00...10.20

3rd pressure hPa : 1000

Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 220 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600
Del.quantity cm3/ : 85.5...88.5
1000 s: (83.0...91.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 27.0...29.0
1000 s: (25.0...31.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.60
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,7 A 3
 Edition : 17.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 261
 Injection pump
 Pump designation : PES6MM100/320RS1204
 EP type number : 0 413 406 192
 Governor
 Governor design. : RQV350...1350MW46-32
 Governor no. : 0 420 083 225

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-360CHT

1st version kW : 138.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:

1st rack travel in: 9.80
Speed rpm : 1415...1435
2nd rack travel in: 4.00
Speed rpm : 1510...1520
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 10.80...10.90
2nd speed rpm : 850
Rack travel in m: 11.50...11.60
3rd speed rpm : 1050
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.90...8.00

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 8.80...8.90
2nd pressure hPa : 580
Rack travel in m: 10.40...10.80
3rd pressure hPa : 900
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 280 (290)

D17

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1350
Del.quantity cm³/ : 107.5...111.5
1000 s: (105.5...113.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 54.0...56.0
1000 s: (52.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1415...1435

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817192C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 2
 Edition : 17.09.90
 Replaces : 16.08.90
 Test oil : ISO-4113

Combination no. : 0 403 446 262

Injection pump
 Pump designation : PES6MM100/32ORS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RGV350...1200MW46-33
 Governor no. : 0 420 083 226

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20
 2nd speed rpm : 1250
 travel mm : 7.80...8.10
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 900
 Del.quantity : 131.0...133.0
 1000 : (129.0...135.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 98...106

Testing:

1st rack travel in: 11.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.10...9.20

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 9.60...9.70
2nd pressure hPa : 575
Rack travel in m: 11.30...11.70
3rd pressure hPa : 900
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 128.5...132.5
1000 s: (126.5...134.5)
Spread cm3 : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 72.0...74.0
1000 s: (70.0...76.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (127.0...173.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817194C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 W 3
 Edition : 17.09.90
 Replaces : 16.08.90
 Test oil : ISO-4113

Combination no. : 0 403 446 263

Injection pump
 Pump designation : PES6MM100/320RS1198
 EP type number : 0 413 406 188
 Governor
 Governor design. : RQV350...1200MW46-34
 Governor no. : 0 420 083 227

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.80...10.20
 2nd speed rpm : 1250
 travel mm : 7.90...8.10
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 900
 Del.quantity : 131.0...133.0
 1000 : (129.0...135.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 98...106

Testing:

1st rack travel in: 11.10
Speed rpm : 1270...1290
2nd rack travel in: 4.00
Speed rpm : 1405...1415
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 250
Rack travel in m: 10.00...10.10
2nd pressure hPa : 575
Rack travel in m: 11.20...11.60
3rd pressure hPa : 900
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm³/ : 128.5...132.5
1000 s: (126.5...134.5)
Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 76.0...78.0
1000 s: (74.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1270...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (127.0...173.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817193C91#

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 81
Edition : 17.10.90
Replaces : 05.03.90
Test oil : ISO-4113

Combination no. : 0 403 446 264

Injection pump
Pump designation : PES6MW100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RQ300/1200MW96-1
Governor no. : 0 420 082 045

Customer-spec. information
Customer : MB-NFZ

Engine : OM366A

1st version kW : 116.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 8.10...8.50

2nd speed rpm : 1200

travel mm : 6.90...7.10

3rd speed rpm : 550

travel mm : 5.40...6.00

4th speed rpm : 300

travel mm : 2.40...2.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 900

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 96...104

Setting point:
Speed rpm : 900
Rack travel in mm : 15.5

Testing:
1st rack travel in: 10.00
Speed rpm : 1240...1255
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.0

Testing:
Speed rpm : 200
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION
Speed rpm : 330...500

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 62.0...65.0
1000 s: (59.5...67.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1240...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.90...8.10
Del.quantity cm³/ : 10.0...14.0
1000 s: (8.5...15.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 99
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 270
Injection pump
Pump designation : PES6MM100/72ORS1144
EP type number : 0 413 406 138
Governor
Governor design. : RQV300...1300MW50-10
Governor no. : 0 420 083 234

Customer-spec. information
Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300
Rack travel in mm : 10.90...11.00
Del.quantity cm3/ : 7.2...7.4
100 s: (7.0...7.6)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.8...8.0
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.5)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.50...8.70
2nd speed rpm : 1450
travel mm : 9.50...9.90
3rd speed rpm : 500
travel mm : 2.70...3.30
4th speed rpm : 300
travel mm : 1.20...1.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1350
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Aneroid pressure h: 900
Del.quantity : 72.0...74.0
1000 : (70.0...76.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 9.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.9
Speed rpm : 300
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION
Speed rpm : 330...500

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 800
Rack travel in m: 11.70...11.90
3rd speed rpm : 585
Rack travel in m: 12.20...12.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.70...9.80

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.00...10.10
2nd pressure hPa : 460
Rack travel in m: 11.20...11.50
3rd pressure hPa : 900
Rack travel in m: 12.20...12.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 71.0...74.0
1000 s: (68.5...76.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 900
Speed rpm : 585
Del.quantity cm3/ : 65.0...68.0
1000 s: (62.5...70.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 27.0...29.0
1000 s: (25.0...31.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 A
Edition : 05.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 271
Injection pump
Pump designation : PES6MW100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RQV300...1300MW50-11
Governor no. : 0 420 083 235

Customer-spec. information
Customer : MB-NFZ

Engine : OM366A

1st version kw : 129.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 10.40

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1425...1455

4th rack travel in: 1550

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 9.0
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 330...500

TORQUE CONTROL
Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.40...11.50
2nd speed rpm : 600
Rack travel in m: 12.50...12.60
3rd speed rpm : 1000
Rack travel in m: 11.50...11.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 225
Rack travel in m: 11.20...11.40
2nd pressure hPa : 325
Rack travel in m: 11.90...12.10
3rd pressure hPa : 900
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 67.0...70.0
1000 s: (64.5...72.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 37.0...39.0
1000 s: (35.0...41.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.90...9.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 Q
Edition : 17.09.90
Replaces : 24.11.89
Test oil : ISO-4113

Combination no. : 0 403 456 111

Injection pump
Pump designation : PES6MW100/321RS1186
EP type number : 0 413 406 168
Governor
Governor design. : RQ250/1200MW84-4
Governor no. : 0 420 082 044

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH

1st version kW : 157.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
: (3.55...3.75)
Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 9.50...9.90

2nd speed rpm : 1250
travel mm : 7.50...7.70

3rd speed rpm : 350
travel mm : 5.20...5.80

4th speed rpm : 250
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Setting point:
Speed rpm : 1200
Rack travel in mm : 15.5

Testing:
1st rack travel in: 13.30
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 14.50
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 14.70...14.80
2nd speed rpm : 600
Rack travel in m: 14.80...14.90
3rd speed rpm : 800
Rack travel in m: 14.80...14.90
4th speed rpm : 1200
Rack travel in m: 14.30...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.40
2nd pressure hPa : 400
Rack travel in m: 13.80...14.10

3rd pressure hPa : 1000
Rack travel in m: 14.80...14.90

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 126.5...129.5
1000 s: (124.0...132.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 126.5...129.5
1000 s: (124.0...132.0)
Aneroid pressure h: 1000
Speed rpm : 1200
Del.quantity cm3/ : 123.0...126.0
1000 s: (120.5...128.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: MAN #3-7008#

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1

start of delivery



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 A
Edition : 05.10.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 456 112

Injection pump
Pump designation : PES6MM100/321RS1190
EP type number : 0 413 406 176
Governor
Governor design. : RQ250/1100MW84-5
Governor no. : 0 420 082 046

Customer-spec. information
Customer : MAN

Engine : D 0826 LOH05

1st version kW : 150.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)

Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 9.30...9.70

2nd speed rpm : 1100

travel mm : 7.30...7.50

3rd speed rpm : 470

travel mm : 6.70...7.30

4th speed rpm : 250

travel mm : 1.40...1.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: 89

Speed rpm : 600

Rack travel in mm : 16.00...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 86...94

Setting point:

Speed rpm : 600
Rack travel in mm : 16.9

Testing:

1st rack travel in: 13.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 50...58
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 5.40...5.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 250
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.00
2nd pressure hPa : 450
Rack travel in m: 13.70...14.00
3rd pressure hPa : 1000
Rack travel in m: 14.80...14.90

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

EO4

Speed rpm : 600
Del.quantity cm3/ : 128.5...131.5
1000 s: (126.0...134.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 131.5...134.5
1000 s: (129.0...137.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7115#

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C10
 Edition : 28.09.90
 Replaces : 01.12.90
 Test oil : ISO-4113
 Combination no. : 0 403 466 112
 Injection pump
 Pump designation : PES6MM100/12ORS1137
 EP type number : 0 413 406 131
 Governor
 Governor design. : RSV425...1100MW2A319
 -8
 Governor no. : 0 420 085 104

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA-8.3 L

1st version kw : 188.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 14.9...15.1
 100 s: (14.7...15.3)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 425.0
 Rack travel in mm : 7.7...7.9
 Del.quantity cm3/ : 1.9...2.3
 100 s: (1.6...2.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 149.0...151.0
 1000 : (147.0...153.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 42...50

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.30

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1235...1265

3rd rack travel in: 4.00

Speed rpm : 1245...1275

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 7.3

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 425

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 490...550

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.30...14.40

2nd speed rpm : 750

Rack travel in m: 15.30...15.40

3rd speed rpm : 900

Rack travel in m: 14.70...15.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 158.5...161.5

1000 s: (156.0...164.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425

Rack travel in mm : 7.70...7.90

Del.quantity cm3/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: CDC #3915970#

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 I 6
 Edition : 21.09.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 117JA
 Injection pump
 Pump designation : PES6MW100/120RS1178
 EP type number : 0 413 406 160
 Governor
 Governor design. : RSV350...1250MW2A332
 -3
 Governor no. : 0 420 085 152

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT

1st version kW : 204.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

E07

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 15.4...15.6

100 s: (15.2...15.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 154.0...156.0

1000 : (152.0...158.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1295...1325
3rd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1650
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 30...38
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.70...5.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 255
Rack travel in m: 11.60...11.80
3rd pressure hPa : 435
Rack travel in m: 13.00...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 88.5...92.5
1000 s: (86.5...94.5)

BREAKAWAY

1st version

E08

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...180.0
1000 s: (155.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.40
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: CDC #3916293#

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

Starting/full-load transition speed from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 E
 Edition : 05.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 474 012
 Injection pump
 Pump designation : PES4MW100/72ORS1207
 EP type number : 0 413 404 113
 Governor
 Governor design. : RSV350...1000MWOA333
 -1
 Governor no. : 0 420 085 153

Customer-spec. information
 Customer : LIEBHERR

Engine : D 914 T

1st version kW : 110.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm3/ : 1.4...1.8
 100 s: (1.1...2.0)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1275
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 390...450

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 11.50...11.60
2nd speed rpm : 700
Rack travel in m: 11.50...11.60
3rd speed rpm : 500
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 132.0...135.0
1000 s: (129.5...137.5)
Spread cm³ : 3.50
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 98
 Edition : 14.09.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 064B
 Injection pump
 Pump designation : PES6MM100/720RS1129
 EP type number : 0 413 406 121
 Governor
 Governor design. : RSV350...1300MWOA329
 -2
 Governor no. : 0 420 085 095

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 132.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 0.8...1.2
 100 s: (0.6...1.4)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 900
 Del.quantity : 78.0...80.0
 1000 : (76.0...82.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 106...114

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.00

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1285...1315
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.50...5.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.00...10.10
2nd speed rpm : 600
Rack travel in m: 11.50...11.60
3rd speed rpm : 800
Rack travel in m: 10.90...11.10
4th speed rpm : 900
Rack travel in m: 10.50...10.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : 175
Rack travel in m: 10.00...10.10
2nd pressure hPa : 300
Rack travel in m: 11.20...11.50
3rd pressure hPa : 900
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 81.0...84.0
1000 s: (78.5...86.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 82.0...85.0
1000 s: (79.5...87.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 8,4 D
Edition : 17.09.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 081
Injection pump
Pump designation : PES6MM100/72ORS1196
EP type number : 0 413 406 184
Governor
Governor design. : RSV350...1050MWOA338
Governor no. : 0 420 085 138

Customer-spec. information
Customer : LIEBHERR

Engine : D 916 T

1st version kW : 170.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.40...3.50
: (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 11.10...11.20
Del.quantity cm3/ : 13.3...13.5
100 s: (13.1...13.7)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 425.0
Rack travel in mm : 4.0...4.5
Del.quantity cm3/ : 1.4...1.8
100 s: (1.1...2.0)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 750
Del.quantity : 133.0...135.0
1000 : (131.0...137.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 3.00
Speed rpm : 1100...1120
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.00...4.50

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 550

1st pressure hPa : 200
Rack travel in m: 10.70...10.80
2nd pressure hPa : 750
Rack travel in m: 11.10...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 500
Del.quantity cm3/ : 125.0...128.0
1000 s: (122.5...130.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 750
Speed rpm : 800
Del.quantity cm3/ : 132.0...135.0
1000 s: (129.5...137.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 120.0...122.0
1000 s: (118.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.00...4.50
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 X 1
Edition : 17.09.90
Replaces : 31.07.90
Test oil : ISO-4113

Combination no. : 0 403 476 082

Injection pump
Pump designation : PES6MM100/32ORS1180-
1
EP type number : 0 413 406 193
Governor
Governor design. : RSV300...1100MWA339
Governor no. : 0 420 085 139

Customer-spec. information
Customer : MAN

Engine : D0826LUE51/160

1st version kW : 118.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 4.2...4.4
Del.quantity cm3/ : 0.6...1.0
100 s: (0.4...1.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 93...101

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.10
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 4.20...4.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.10...10.20
2nd speed rpm : 800
Rack travel in m: 10.80...10.90
3rd speed rpm : 600
Rack travel in m: 10.80...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 380
Rack travel in m: 10.50...10.80
3rd pressure hPa : 1000
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 800

Del.quantity cm³/ : 109.5...112.5
1000 s: (107.0...115.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 70.0...72.0
1000 s: (68.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7062#
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a81
 Edition : 26.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449AB
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3352892-VERSA001

Customer-spec. information
 Customer : CUMMINS
 Engine : 6 CT 8.3
 1st version kW : 125.1
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...7.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 10.70...10.80
 Del. quantity cm3/ : 9.3...9.5
 100 s: (9.1...9.7)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm3/ : 1.3...1.7
 100 s: (1.0...1.9)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 93.0...95.0
 1000 : (91.0...97.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Testing:

1st rack travel in: 9.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
5th speed rpm : 400
Rack travel in m: 11.10...11.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a75
Edition : 26.03.90
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 083 449AG

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Cust. part no. : 3353251-VERSA006

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 133.2
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...7.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Testing:

1st rack travel in: 9.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.40...11.50
4th speed rpm : 835
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 95.0...98.0
1000 s: (92.5...100.5)
Speed rpm : 700
Del.quantity cm3/ : 103.0...106.0
1000 s: (100.5...108.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

E20

Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a80
Edition : 26.03.90
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 083 449AI
Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R
Governor no. : 9 420 083 201

Cust. part no. : 3352894-VERSA008

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 139.8
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...7.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:

1st rack travel in: 10.10
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 61...69
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.30
5th speed rpm : 400
Rack travel in m: 11.50...12.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a79
 Edition : 26.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449BC
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3353232-VERSA012

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 154.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...7.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 86...94

Testing:

1st rack travel in: 11.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 12.40...12.50
2nd speed rpm : 500
Rack travel in m: 12.40...12.60
5th speed rpm : 400
Rack travel in m: 12.80...13.30

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a82
Edition : 26.03.90
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 083 449C1

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Cust. part no. : 3354421-VERSA028

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 154.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...7.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.1...1.5
100 s: (0.8...1.7)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 10.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 11.70...11.90
5th speed rpm : 400
Rack travel in m: 12.10...12.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

APPLICATION

Navy

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 P2
Edition : 27.3.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R378-4
Customer Part-No. : 3 917 033

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power k: 59
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 58,5...59,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: 7,0

Full-load speed regulation:

Speed 1/min: 1140
Del.quantity cm3/
1000H: 45,0...51,0

Start:

Speed 1/min: 110
Del.quantity : -
mind cm3/1000H.: 50,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: 1,0...2,4
2nd speed 1/min: 900
TD travel mm: 2,3...2,7
mm: 1,8...2,2
3rd speed 1/min: 1100
TD travel mm: 3,1...3,9
mm: 2,8...4,2

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,3...2,9
bar: 2,1...3,1
2nd speed 1/min: 900

Supply-pump
pressure bar: 4,1...4,7
bar: 3,9...4,9
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4,9...5,5
bar: 4,7...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 15...30
quantity cm³/10s: -
2nd speed 1/min: 1100
Overflow : 20...50
quantity cm³/10s: -

Delivery-quant. and breakaway char.:

1st speed 1/min: 1210
Del.quantity cm³/: 0,00...15,0
1000H.: -
2nd speed 1/min: 1170
Del.quantity cm³/: 15,0...55,0
1000H.: -
3rd speed 1/min: 1140
Del.quantity cm³/: 45,0...51,0
1000H.: 42,0...54,0
4th speed 1/min: 1100
Del.quantity cm³/: 58,0...61,0
1000H.: 56,5...62,5
5th speed 1/min: 900
Del.quantity cm³/: 58,5...59,5
1000H.: 56,0...62,0
6th speed 1/min: 750
Del.quantity cm³/: 57,5...61,5
1000H.: 55,5...63,5
7th speed 1/min: 500
Del.quantity cm³/: 50,0...58,0
1000H.: 48,0...60,0

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)

2nd speed 1/min: 500
Del.quantity cm³/: 0,0...4,0
1000H.: (-)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 1,1...1,5
SVS max.	mm	: 3,5
XK	mm	: -
XL	mm	: -

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N24
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R378-4
Type number : 0 460 424 062
Customer Part-No. : 3 917 554

Customer-specific information
Customer : CDC

Engine : 4 BT 3.9 IND.

Power k: 68
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

F01

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 67,5...68,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 450
Del.quantity cm3/
1000H.: 9,0...15,0
Dispersion cm3/: 5,5
1000H.: 7,0

Full-load speed regulation:

Speed 1/min: 1160
Del.quantity cm3/
1000H: 51,0...57,0

Start:

Speed 1/min: 110
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: 2,3...2,7
mm: (1,8...2,2)
3rd speed 1/min: 1100
TD travel mm: 3,1...3,9
mm: (2,8...4,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,3...2,9
bar: 2,1...3,1
2nd speed 1/min: 900

Supply-pump
pressure bar: 4,1...4,7
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1230
Del.quantity cm³/: 0,0...1,0
1000H.: -
2nd speed 1/min: 1175
Del.quantity cm³/: 15,0...55,0
1000H.: -
3rd speed 1/min: 1160
Del.quantity cm³/: 51,0...57,0
1000H.: (48,0...60,0)
4th speed 1/min: 1100
Del.quantity cm³/: 65,5...68,5
1000H.: (64,0...70,0)
5th speed 1/min: 900
Del.quantity cm³/: 67,5...68,5
1000H.: (65,0...71,0)
6th speed 1/min: 750
Del.quantity cm³/: 70,0...74,0
1000H.: (68,0...76,0)
7th speed 1/min: 500
Del.quantity cm³/: 74,0...82,0
1000H.: (72,0...84,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 450
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 450
Del.quantity cm³/: 9,0...15,0
1000H.: (7,0...17,0)
2nd speed 1/min: 530

Del.quantity cm³/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 1,1...1,5
SVS max.	mm	: 3,5
XK	mm	: -
XL	mm	: -

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 P2
Edition : 31.10.90
replaces : 14.07.90
Calibrating oil : ISO 4113

Injection pump : VE 6/12F125D R159-16
Type number : 0 460 426 066
Customer Part-No. : 3 908 214

Customer-specific information
Customer : CDC

Engine : 6 BT 5.9 IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm : 1,3
mm : +0,02(0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

F03

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm3/
1000H.: 73,0...74,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 360
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H: 51,0...57,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1390
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1350
Del.quantity cm3/: 15,0...55,0
1000H.: -
4th speed 1/min: 1300
Del.quantity cm3/: 51,0...57,0
1000H.: (48,0...60,0)
5th speed 1/min: 1250
Del.quantity cm3/: 70,0...73,0
1000H.: (68,5...74,5)
6th speed 1/min: 1100
Del.quantity cm3/: 73,0...74,0
1000H.: (70,5...76,5)
7th speed 1/min: 900
Del.quantity cm3/: 74,5...78,5
1000H.: -
8th speed 1/min: 750
Del.quantity cm3/: 76,0...80,0
1000H.: (74,0...82,0)
9th speed 1/min: 500
Del.quantity cm3/: 64,0...72,0
1000H.: (62,0...74,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm3/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 360
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 360

Del.quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm3/: -
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,6...1,0
SVS max.	mm	: 1,5
XK	mm	: 18,8...20,8
XL	mm	: 11,1...14,5

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 P1
Edition : 31.10.90
replaces : 02.11.89
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R159-16
Type number : 0 460 426 066

Customer-specific information
Customer : CDC

Engine : 6BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,3
mm: $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. with charge press.:

Speed 1/min: 1100
Del.quantity cm³/
1000H.: 73,0...74,0
Dispersion cm³/
1000H : (4,5)

Low-idle speed regulation:

Speed 1/min: 360
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm³/
1000H: 51,0...57,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1390
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1350
Del.quantity cm³/: 15,0...55,0
1000H.: -
4th speed 1/min: 1300
Del.quantity cm³/: 51,0...57,0
1000H.: (48,0...60,0)
5th speed 1/min: 1250
Del.quantity cm³/: 70,0...73,0
1000H.: (68,5...74,5)
6th speed 1/min: 1100
Del.quantity cm³/: 73,0...74,0
1000H.: (70,5...76,5)
7th speed 1/min: 900
Del.quantity cm³/: 74,5...78,5
1000H.: -
8th speed 1/min: 750
Del.quantity cm³/: 76,0...80,0
1000H.: (74,0...82,0)
9th speed 1/min: 500
Del.quantity cm³/: 64,0...72,0
1000H.: (62,0...74,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: -
1000H.: 0...3

Electr. shutoff:

Speed 1/min: 360
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 360

F06

Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,6...1,0
SVS max.	mm	: 0,9
XK	mm	: 18,8...20,8
XL	mm	: 11,8...15,2

Remarks:

: C.D.C. # 390 8198
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 P3
Edition : 31.10.90
replaces : 02.11.89
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R159-16
Type number : 0 460 426 066
Customer Part-No. : 3 916 114

Customer-specific information
Customer : CDC

Engine : 6BT-5.9 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,3
mm: +0,02(0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

F07

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. with charge press.:

Speed 1/min: 1100
Del.quantity cm3/
1000H.: 73,0...74,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Low-idle speed regulation:

Speed 1/min: 360
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H: 51,0...57,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1390
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1350
Del.quantity cm³/: 15,0...55,0
1000H.: -
4th speed 1/min: 1300
Del.quantity cm³/: 51,0...57,0
1000H.: (48,0...60,0)
5th speed 1/min: 1250
Del.quantity cm³/: 70,0...73,0
1000H.: (68,5...74,5)
6th speed 1/min: 1100
Del.quantity cm³/: 73,0...74,0
1000H.: (70,5...76,5)
7th speed 1/min: 900
Del.quantity cm³/: 74,5...78,5
1000H.: -
8th speed 1/min: 750
Del.quantity cm³/: 76,0...80,0
1000H.: (74,0...82,0)
9th speed 1/min: 500
Del.quantity cm³/: 64,0...72,0
1000H.: (62,0...74,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: -
1000H.: 0..3

Electr. shutoff:

Speed 1/min: 360
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 360

F08

Del.quantity cm³/: 7,0...15,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,6...1,0
SVS max.	mm	: 0,9
XK	mm	: 18,8...20,8
XL	mm	: 11,8...15,2

Remarks:

: C.D.C. # 3 908 198

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S
Edition : 31.10.90
replaces : 11.12.86
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R225-4
Type number : 0 460 426 071

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 027

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,3
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,5...3,9

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 9,0...15,0
Dispersion cm³/
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm³/
1000H.: 54,0...60,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,5...3,9
mm: (3,0...4,4)
3rd speed 1/min: 1100
TD travel mm: 5,4...6,2
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1260
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 54,0...60,0
1000H.: (51,0...63,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 750
Del.quantity cm³/: 72,0...76,0
1000H.: (70,0...78,0)
7th speed 1/min: 500
Del.quantity cm³/: 58,0...66,0
1000H.: (56,0...68,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 9,0...15,0
1000H.: (7,0...17,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,0
XK	mm	: 20,2...22,2
XL	mm	: 11,5...14,9

Remarks:

: C.D.C. # 3 903 367
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S1
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R225-4
Type number : 0 460 426 071
Customer Part-No. : 3 910 250

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 027

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,3
mm : $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 71,5...72,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H.: 50,0...56,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 1,5...4,5
1000H.: -
2nd speed 1/min: 1220
Del.quantity cm³/: 15,0...55,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 50,0...56,0
1000H.: (47,0...59,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 750
Del.quantity cm³/: 71,0...75,0
1000H.: (69,0...77,0)
7th speed 1/min: 500
Del.quantity cm³/: 58,0...66,0
1000H.: (56,0...68,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 60,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,0...5,4
MS	mm	:	0,8...1,2
SVS max.	mm	:	1,0
XK	mm	:	20,2...22,2
XL	mm	:	11,5...14,9

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S6
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1150 R225-4
Type number : 0 460 426 071
Customer Part-No. : 3 916 115

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 027

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm : 1,3
mm : +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,5...3,9

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 71,5...72,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 9,0...15,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H.: 54,0...60,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,5...3,9
mm: (3,0...4,4)
3rd speed 1/min: 1100
TD travel mm: 5,4...6,2
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 1,0...3,0
1000H.: -
2nd speed 1/min: 1260
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 54,0...60,0
1000H.: (51,0...63,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 750
Del.quantity cm³/: 72,0...76,0
1000H.: (70,0...78,0)
7th speed 1/min: 500
Del.quantity cm³/: 58,0...66,0
1000H.: (56,0...68,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 9,0...15,0
1000H.: (7,0...17,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,0...5,4
MS	mm	:	0,8...1,2
SVS max.	mm	:	1,0
XK	mm	:	20,2...22,2
XL	mm	:	11,5...14,9

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S5
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R225-4
Type number : 0 460 426 071
Customer Part-No. : 3 916 116

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 027

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,3
mm : $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,5...3,9

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 9,0...15,0
Dispersion cm³/
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm³/
1000H.: 54,0...60,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,5...3,9
mm: (3,0...4,4)
3rd speed 1/min: 1100
TD travel mm: 5,4...6,2
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 1,0...3,0
1000H.: -
2nd speed 1/min: 1260
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 54,0...60,0
1000H.: (51,0...63,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 750
Del.quantity cm³/: 72,0...76,0
1000H.: (70,0...78,0)
7th speed 1/min: 500
Del.quantity cm³/: 58,0...66,0
1000H.: (56,0...68,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 9,0...15,0
1000H.: (7,0...17,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,0...5,4
MS	mm	:	0,8...1,2
SVS max.	mm	:	1,0
XK	mm	:	20,2...22,2
XL	mm	:	11,5...14,9

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W70
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-22
Type number : 0 460 426 132
Customer Part-No. : 3 919 457

Customer-specific information
Customer : CDC

Engine : 6 BTA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,85
mm : $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,4...2,8

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 3,8...4,4

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 92,0...93,0
Dispersion cm3/ : 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 480
Del.quantity cm3/
1000H.: 11,0...17,0

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H: 15,0...25,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: 2,4...2,8
mm: (1,9...3,3)
3rd speed 1/min: 1100
TD travel mm: 3,0...3,8
mm: (2,7...4,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,2...2,8
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,2...3,8
3rd speed 1/min: 900
Supply-pump
pressure bar: 3,8...4,4

4th speed 1/min: 1100
Supply-pump
pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1230
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 15,0...25,0
1000H.: -
4th speed 1/min: 1100
Del.quantity cm³/: 75,0...78,0
1000H.: (73,5...79,5)
5th speed 1/min: 900
Del.quantity cm³/: 80,5...83,5
1000H.: (78,5...85,5)
6th speed 1/min: 750
Del.quantity cm³/: 92,0...93,0
1000H.: (89,5...95,5)
7th speed 1/min: 500
Del.quantity cm³/: 91,0...101,0
1000H.: (90,0...102,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 480
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 480
Del.quantity cm³/: 11,0...17,0
1000H.: (9,0...19,0)
2nd speed 1/min: 550
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H: 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,1...5,5
MS	mm	: 0,8...1,2
SVS max.	mm	: 2,2
XK	mm	: 18,8...20,8
XL	mm	: 11,9...15,3

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W69
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-22
Type number : 0 460 426 132
Customer Part-No. : 3 919 458

Customer-specific information
Customer : CDC

Engine : 6 BTA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm : 1,85
mm : +0,02(0,06)
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,4...2,8

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 3,8...4,4

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 92,0...93,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 480
Del.quantity cm3/
1000H.: 11,0...17,0

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H: 15,0...25,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: 2,4...2,8
mm: (1,9...3,3)
3rd speed 1/min: 1100
TD travel mm: 3,0...3,8
mm: (2,7...4,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,2...2,8
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,2...3,8
3rd speed 1/min: 900
Supply-pump
pressure bar: 3,8...4,4

4th speed 1/min: 1100
Supply-pump pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1230
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1190
Del. quantity cm3/: 15,0...25,0
1000H.: -
4th speed 1/min: 1100
Del. quantity cm3/: 75,0...78,0
1000H.: (73,5...79,5)
5th speed 1/min: 900
Del. quantity cm3/: 80,5...83,5
1000H.: (78,5...85,5)
6th speed 1/min: 750
Del. quantity cm3/: 92,0...93,0
1000H.: (89,5...95,5)
7th speed 1/min: 500
Del. quantity cm3/: 91,0...101,0
1000H.: (90,0...102,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del. quantity cm3/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 480
ELAB volt: -
Del. quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 480
Del. quantity cm3/: 11,0...17,0
1000H.: (9,0...19,0)
2nd speed 1/min: 550
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H: 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,5
MS	mm	:	0,8...1,2
SVS max.	mm	:	2,2
XK	mm	:	18,8...20,8
XL	mm	:	11,9...15,3

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W72
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R320-2
Type number : 0 460 426 139
Customer Part-No. : 3 916 896

Customer-specific information
Customer : CDC

Engine : 6 BT -5,9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery block
Piston stroke mm: 1,4
mm: +0,02(0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value mm: 1,3...1,7
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value bar: 6,8...7,4
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del.quantity cm3/
1000H.: 73,0...74,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 51,0...52,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 9,0
1000H.: (9,0)

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm3/
1000H.: 5,5...9,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1200
Del.quantity cm3/
1000H: 52,5...58,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 70,0
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450*
 Charge press. hPa: -
 TD travel mm: 3,0...4,0 *
 mm: -
 KSB solenoid-operated
 valve volt: -
 2nd speed 1/min: 1000
 Charge press. hPa: 1200
 TD travel mm: 0,5...1,3
 mm: (0,2...1,6)
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1100
 Charge press. hPa: 1200
 TD travel mm: 1,3...1,7
 mm: (0,8...2,2)
 KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 1250
 Charge press. hPa: 1200
 TD travel mm: 2,2...3,0
 mm: (1,9...3,3)
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 4,1...4,7
 KSB solenoid-operated
 valve volt: 12,0
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 6,8...7,4
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1250
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 7,5...8,1
 KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm3/10s: (26...98)
 2nd speed 1/min: 1250

Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 68,0...69,0
 1000H.: (64,5...72,5)
 2nd speed 1/min: 1550
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 0,0...3,0
 1000H.: -
 3rd speed 1/min: 1400
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 15,0...55,0
 1000H.: -
 4th speed 1/min: 1340
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 52,5...58,5
 1000H.: (49,5...61,5)
 5th speed 1/min: 1250
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 70,5...73,5
 1000H.: (69,0...75,0)
 6th speed 1/min: 1100
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 73,0...74,0
 1000H.: (70,5...76,5)
 7th speed 1/min: 750
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 72,0...77,0
 1000H.: (70,0...79,0)
 8th speed 1/min: 700
 Charge press. hPa: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 68,0...69,0
 1000H.: (64,5...72,5)
 9th speed 1/min: 500
 Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 51,0...52,0
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 5,5...9,5
1000H.: (2,5...12,5)
2nd speed 1/min: 450
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 250
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H: 50,0
Del.quantity cm³/: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,7

KF mm : K-OT
MS mm : 0,8...1,2
SVS max. mm : 1,4

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

* Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W71
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R320-2
Type number : 0 460 426 139
Customer Part-No. : 3 916 897

Customer-specific information
Customer : CDC

Engine : 6 BT -5,9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery block
Piston stroke mm: 1,4
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value mm: 1,3...1,7
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value bar: 6,8...7,4
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del.quantity cm3/
1000H.: 73,0...74,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 51,0...52,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm3/ : 9,0
1000H.: (9,0)

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm3/
1000H.: 5,5...9,5
KSB solenoid-operated
valve volt: 24,0
Dispersion cm3/ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1200
Del.quantity cm3/
1000H: 52,5...58,5
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 70,0
KSB solenoid-operated
valve volt: 24,0

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450*
Charge press. hPa: -
TD travel mm: 3,0...4,0 *

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1200
TD travel mm: 0,5...1,3
mm: (0,2...1,6)

KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 1100
Charge press. hPa: 1200
TD travel mm: 1,3...1,7
mm: (0,8...2,2)

KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1250
Charge press. hPa: 1200
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1200
Supply-pump
pressure bar: 4,1...4,7

KSB solenoid-operated
valve volt: 24,0

2nd speed 1/min: 1100
Charge press. hPa: 1200

Supply-pump
pressure bar: 6,8...7,4

KSB solenoid-operated
valve volt: 24,0

3rd speed 1/min: 1250
Charge press. hPa: 1200

Supply-pump
pressure bar: 7,5...8,1

KSB solenoid-operated
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250

Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 700
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 68,0...69,0
1000H.: (64,5...72,5)

2nd speed 1/min: 1550
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...3,0
1000H.: -

3rd speed 1/min: 1400
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 15,0...55,0
1000H.: -

4th speed 1/min: 1340
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 52,5...58,5
1000H.: (49,5...61,5)

5th speed 1/min: 1250
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 70,5...73,5
1000H.: (69,0...75,0)

6th speed 1/min: 1100
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 73,0...74,0
1000H.: (70,5...76,5)

7th speed 1/min: 750
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 72,0...77,0
1000H.: (70,0...79,0)

8th speed 1/min: 700
Charge press. hPa: 700
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 68,0...69,0
1000H.: (64,5...72,5)

9th speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 51,0...52,0
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 5,5...9,5
1000H.: (2,5...12,5)
2nd speed 1/min: 450
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 250
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
max. 1000H: 50,0
Del.quantity cm³/: -

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : 3,7

F26

KF mm : K-OT
MS mm : 0,8...1,2
SVS max. mm : 1,4

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

* Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 W73
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R320-2
Type number : 0 460 426 139
Customer Part-No. : 3 916 992

Customer-specific information
Customer : CDC

Engine : 6 BT -5,9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery block
Piston stroke mm: 1,4
mm: +0,02(0,06)
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value mm: 1,3...1,7
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value bar: 6,8...7,4
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del.quantity cm³/
1000H.: 73,0...74,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³/ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 51,0...52,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³/ : 9,0
1000H.: (9,0)

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm³/
1000H.: 5,5...9,5
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³/ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1200
Del.quantity cm³/
1000H.: 52,5...58,5
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 70,0
KSB solenoid-operated
valve volt: 24,0

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450*
 Charge press. hPa: -
 TD travel mm: 3,0...4,0 *
 mm: -
 KSB solenoid-operated
 valve volt: -
 2nd speed 1/min: 1000
 Charge press. hPa: 1200
 TD travel mm: 0,5...1,3
 mm: (0,2...1,6)
 KSB solenoid-operated
 valve volt: 24,0
 3rd speed 1/min: 1100
 Charge press. hPa: 1200
 TD travel mm: 1,3...1,7
 mm: (0,8...2,2)
 KSB solenoid-operated
 valve volt: 24,0
 4th speed 1/min: 1250
 Charge press. hPa: 1200
 TD travel mm: 2,2...3,0
 mm: (1,9...3,3)
 KSB solenoid-operated
 valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 4,1...4,7
 KSB solenoid-operated
 valve volt: 24,0
 2nd speed 1/min: 1100
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 6,8...7,4
 KSB solenoid-operated
 valve volt: 24,0
 3rd speed 1/min: 1250
 Charge press. hPa: 1200
 Supply-pump
 pressure bar: 7,5...8,1
 KSB solenoid-operated
 valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 24,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 1250

Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 700
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 68,0...69,0
 1000H.: (64,5...72,5)
 2nd speed 1/min: 1550
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 0,0...3,0
 1000H.: -
 3rd speed 1/min: 1400
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 15,0...55,0
 1000H.: -
 4th speed 1/min: 1340
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 52,5...58,5
 1000H.: (49,5...61,5)
 5th speed 1/min: 1250
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 70,5...73,5
 1000H.: (69,0...75,0)
 6th speed 1/min: 1100
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 73,0...74,0
 1000H.: (70,5...76,5)
 7th speed 1/min: 750
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 72,0...77,0
 1000H.: (70,0...79,0)
 8th speed 1/min: 700
 Charge press. hPa: 700
 KSB solenoid-operated
 valve volt: 24,0
 Del.quantity cm³/: 68,0...69,0
 1000H.: (64,5...72,5)
 9th speed 1/min: 500
 Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 51,0...52,0
1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 5,5...9,5
1000H.: (2,5...12,5)
2nd speed 1/min: 450
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 250
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
max. 1000H: 50,0
Del.quantity cm³/: -

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : 3,7

KF mm : K-OT
MS mm : 0,8...1,2
SVS max. mm : 1,4

Remarks:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

* Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U38
Edition : 31.10.90
replaces : 12.07.89
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-23
Type number : 0 460 426 143

Customer-specific information
Customer : CDC

Engine : 6 BT -5,9 IN

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm : 1,3
mm : +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 71,5...72,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,00
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H: 50,0...56,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,5...6,3
mm: (5,2...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1220
Del.quantity cm³/: 15,0...55,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 50,0...56,0
1000H.: (47,0...59,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 500
Del.quantity cm³/: 55,5...64,5
1000H.: =

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 60,0

3rd speed 1/min: 240
Del.quantity cm³/: -
1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: -
XK	mm	: 20,2...22,2
XL	mm	: 11,5...14,9

Remarks:

: C.D.C. # 391 6949
Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U49
Edition : 31.10.90
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R225-23
Type number : 0 460 426 143
Customer Part-No. : 3 916 950

Customer-specific information
Customer : CDC

Engine : 6 BT -5,9 IN

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,3
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

G04

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 71,5...72,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,00
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H: 50,0...56,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,5...6,3
mm: (5,2...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1220
Del.quantity cm³/: 15,0...55,0
1000H.: -
3rd speed 1/min: 1190
Del.quantity cm³/: 50,0...56,0
1000H.: (47,0...59,0)
4th speed 1/min: 1150
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
5th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
6th speed 1/min: 500
Del.quantity cm³/: 55,5...64,5
1000H.: -

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del.quantity cm³/: -
ind. 1000H: 70,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H : 60,0

3rd speed 1/min: 240
Del.quantity cm³/: -
1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: -
XK	mm	: 20,2...22,2
XL	mm	: 11,5...14,9

Remarks:

:

Heavy-duty fuel-injection pump for
DI-engines: only test using timing-
device-travel measuring device with
metal jacket

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 b 1
Edition : 28.11.90
Replaces : 11.11.88
Test oil : ISO-4113

Combination no. : 0 400 846 543

Injection pump
Pump designation : PES6A95D420LS2595
EP type number : 0 410 896 930
Governor
Governor design. : RQ200/1100AB1210R
Governor no. : 0 420 201 643

Customer spec. information
Customer : RABA

Engine : D2156MT6U

1st version kW : 188.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 19.9

Testing:

1st rack travel in: 11.60

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6.4

Testing:

Speed rpm : 100

Minimum rack trave: 7.60

Speed rpm : 200

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00

Speed rpm : 320...360

Speed rpm : 450

Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.60...12.70

2nd speed rpm : 600

Rack travel in m: 13.80...14.00

3rd speed rpm : 865

Rack travel in m: 13.40...13.70

4th speed rpm : 985

Rack travel in m: 13.00...13.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.10...11.20

2nd pressure hPa : 340

Rack travel in m: 12.80...12.90

3rd pressure hPa : 250

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm3/ : 135.0...138.0

1000 s: (133.0...140.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 82.5...84.5

1000 s: (80.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 177.0...187.0

1000 s: (174.0...190.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

Set idle stop at 200 min -1 to a
control-rod travel of 6.4 mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i
Edition : 16.11.90
Replaces : 29.6.90
Test oil : ISO-4113

Combination no. : 0 401 846 923

Injection pump
Pump designation : PE6P120A320RS3118
EP type number : 0 411 826 726
Governor
Governor design. : RQV250...1100PA920-6
Governor no. : 0 421 813 872

Customer-spec. information
Customer : VOLVO-TRUCK

Engine : THD 102 KD

1st version kW : 250.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
: (2.55...2.75)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 2.9...3.5
100 s: (2.6...3.8)
Spread cm3 : 0.5
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.40
2nd speed rpm : 500
travel mm : 4.10...4.70
3rd speed rpm : 800
travel mm : 6.30...6.70
4th speed rpm : 1140
travel mm : 7.70...7.90
5th speed rpm : 1230
travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1175
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1200

Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.30
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 250
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.40...9.50
3rd pressure hPa : 770
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...270.0
1000 s: (225.0...275.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 29.0...35.0
1000 s: (26.0...38.0)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 q
Edition : 06.07.90
Replaces : 30.3.90
Test oil : ISO-4113

Combination no. : 0 402 036 734

Injection pump
Pump designation : PES6P120A720/3LS3247
EP type number : 0 412 026 735
Governor
Governor design. : RQ300/1100PA813-12
Governor no. : 0 421 801 518

Customer-spec. information
Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.50...15.50
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del. quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.8...5.2
Del. quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 700
Rack travel in m: 15.00...15.10
3rd speed rpm : 900
Rack travel in m: 14.80...15.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 95.0...101.0
1000 s: (92.0...104.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 r1
Edition : 05.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 036 735X

Injection pump
Pump designation : PES6P120A720/3LS3250
-1

EP type number : 0 412 026 742
Governor
Governor design. : RQ300/1000PA813-13
Governor no. : 0 421 801 529

Cust. part no. : 3-7050X

Customer-spec. information
Customer : MAN

Engine : D2866LX

1st version kW : 265.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.1...4.3
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.00
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.2

Testing:
Speed rpm : 100
Minimum rack travel: 5.70
Speed rpm : 300
Rack travel in mm : 4.10...4.30
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.00...13.10
2nd speed rpm : 700
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 470
Rack travel in m: 11.90...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1000

Del.quantity cm3/ : 236.0...242.0
1000 s: (233.0...245.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u4
 Edition : 30.11.90
 Replaces : 31.7.90
 Test oil : ISO-4113
 Combination no. : 0 402 036 742
 Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1100PA813-7
 Governor no. : 0 421 801 474

Customer-spec. information
 Customer : MAN

Engine : D2866LF01

1st version kW : 273.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 16.00...17.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 242.0...244.0
 1000 : (239.0...247.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650
Rack travel in mm : 16.8

Testing:

1st rack travel in: 13.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.80...14.90
2nd speed rpm : 700
Rack travel in m: 15.80...16.00
3rd speed rpm : 900
Rack travel in m: 15.10...15.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

G15

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Speed rpm : 700
Del.quantity cm3/ : 90.0...100.0
1000 s: (87.0...103.0)
Spread cm3 : 10.00
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 k
Edition : 30.11.90
Replaces : 20.7.90
Test oil : ISO-4113

Combination no. : 0 402 046 340

Injection pump
Pump designation : PES6P120A32ORS525
EP type number : 0 412 026 058
Governor
Governor design. : RQV300...1050PA955
Governor no. : 0 421 813 856

Customer-spec. information
Customer : RVI

Engine : MIDS062045J

1st version kW : 160.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.3...5.7
Del.quantity cm3/ : 1.5...2.1
100 s: (1.2...2.4)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
travel mm : 8.00...8.20
2nd speed rpm : 300
travel mm : 1.10...1.50
3rd speed rpm : 430
travel mm : 3.40...4.00
4th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1075
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del.quantity : 138.0...140.0
1000 : (135.0...143.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 8.40
Speed rpm : 1130...1140
2nd rack travel in: 4.20
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 244...252

Testing:

Speed rpm : 200
Minimum rack travel: 7.40
Speed rpm : 300
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 310...430

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 126.0...134.0
1000 s: (123.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.70
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 b 1
Edition : 15.08.89
Replaces : 16.12.88
Test oil : ISO-4113

Combination no. : 0 402 046 788

Injection pump
Pump designation : PES6P110A32ORS3190
EP type number : 0 412 016 720
Governor
Governor design. : RQV275...1175PA833-3
Governor no. : 0 421 813 656

Customer-spec. information
Customer : RVI

Engine : MIDR 060226D

1st version kW : 151.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1175
Rack travel in mm : 13.40...13.50
Del. quantity cm³/ : 11.6...11.9
100 s: (11.3...12.1)
Spread cm³ : 0.4
100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 4.6...5.0
Del. quantity cm³/ : 2.7...3.2
100 s: (2.4...3.4)
Spread cm³ : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL
1st speed rpm : 250
travel mm : 0.90...1.10
2nd speed rpm : 450
travel mm : 3.40...3.80
3rd speed rpm : 800
travel mm : 5.10...5.50
4th speed rpm : 1175
travel mm : 7.20...7.50

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 1000
Del. quantity : 116.0...119.0
1000 : (113.5...121.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.40
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 400
Rack travel in m: 12.80...12.90
3rd pressure hPa : 160
Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 111.5...116.5
1000 s: (108.5...119.5)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 27.0...32.0
1000 s: (24.5...34.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f2
 Edition : 22.11.90
 Replaces : 5.11.90
 Test oil : ISO-4113
 Combination no. : 0 402 046 791
 Injection pump
 Pump designation : PES6P120A320RS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...950PA728-4
 Governor no. : 0 421 813 678

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.60...6.00
 Del.quantity cm3/ : 2.3...2.9
 100 s: (2.0...3.2)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.30...1.70
 2nd speed rpm : 450
 travel mm : 3.30...3.70
 3rd speed rpm : 800
 travel mm : 5.60...6.00
 4th speed rpm : 950
 travel mm : 6.70...6.90
 5th speed rpm : 1500
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 212.0...214.0
 1000 : (209.0...217.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.30
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.50
2nd pressure hPa : 660
Rack travel in m: 12.60...12.70
3rd pressure hPa : 200
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950

Del.quantity cm3/ : 210.0...216.0
1000 s: (207.0...219.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 f
Edition : 30.11.90
Replaces : 9.11.89
Test oil : ISO-4113

Combination no. : 0 402 046 811

Injection pump
Pump designation : PES6P110A32ORS3233
EP type number : 0 412 016 728
Governor
Governor design. : RQV275...1175PA833-4
Governor no. : 0 421 813 762

Customer-spec. information
Customer : RVI

Engine : MIDR 060226D

1st version kW : 166.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
: (4.15...4.35)
Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 11.7...12.0

100 s: (11.4...12.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 2.8...3.3
100 s: (2.5...3.5)
Spread cm3 : 0.4
100 s: (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.40...0.60
2nd speed rpm : 450
travel mm : 2.90...3.50
3rd speed rpm : 800
travel mm : 4.60...5.00
4th speed rpm : 1175
travel mm : 6.90...7.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1330
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 1000
Del.quantity : 117.0...120.0
1000 : (114.5...122.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 12.50
Speed rpm : 1255...1265
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.20
Speed rpm : 275
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.60
2nd pressure hPa : 400
Rack travel in m: 12.50...12.60
3rd pressure hPa : 160
Rack travel in m: 10.50...10.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 113.5...118.5
1000 s: (110.5...121.5)
Aneroid pressure h: -

G23

Speed rpm : 500
Del.quantity cm³/ : 49.5...52.5
1000 s: (47.0...55.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1255...1265

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...105.0
1000 s: (81.0...109.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 28.0...33.0
1000 s: (25.5...35.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

Note remarks

Combination no. : 0 402 640 818

Customer-spec. information
Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
Rated speed : 2300

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 4.50...4.60
                   : (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order      : 12- 1- 5- 9- 8- 3-
                   : 4- 11- 10- 2- 6- 7
```

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 30.4...30.6

100 s: (30.1...30.9)

Spread cm³ : 0.5

100 s: (0,9)

```
2nd speed      rpm : 500.0
Rack travel in mm : 9.00...9.20
Del.quantity   cm3/ : 14.9...15.1
               100 s: (14.6...15.4)
```

Spread cm3 : 0.8
100 s: (1.2)

```

3rd speed      rpm      : 300
Rack travel in mm : 7.30...7.50
Del.quantity   cm3/     : 5.2...6.0 *
                100 s: (-)

```

(B) Setting of injection pump
with governor

1st speed	rpm	:	300
travel mm		:	1.20...1.60
2nd speed	rpm	:	450
travel mm		:	2.90...3.50
3rd speed	rpm	:	750
travel mm		:	5.70...6.10
4th speed	rpm	:	1150
travel mm		:	9.50...9.70
5th speed	rpm	:	1400
travel mm		:	13.00...14.00

Control-Lever position
Degree: -1

Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 300
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 100
Rack travel in m: 9.50...9.60
3rd pressure hPa : 470
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : - **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm3/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm3/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm3/ : 125.0
1000 s: (-)

Remarks:

: MAN-NR. 3-7023

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9

and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 x 2
Edition : 19.10.90
Replaces : 14.9.90
Test oil : ISO-4113

Combination no. : 0 402 640 819

Injection pump
Pump designation : PE12P120A320LS7807-3
EP type number : 0 412 620 822
Governor
Governor design. : RQV350...1050PA842-6
Governor no. : 0 421 813 853

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 0.70...1.20

2nd speed rpm : 600
travel mm : 3.10...3.60

3rd speed rpm : 940
travel mm : 5.20...5.70

4th speed rpm : 1105
travel mm : 6.70...7.20

5th speed rpm : 1263
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 660
Del.quantity : 199.0...201.0
1000 : (196.0...204.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 107...115

Testing:

1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.10
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 400...600

TORQUE CONTROL

Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.40
2nd speed rpm : 975
Rack travel in m: 12.60...12.80
3rd speed rpm : 875
Rack travel in m: 13.20...13.40
4th speed rpm : 700
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 660
Rack travel mm : 13.50...13.70

Measurement

G28

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 11.30...11.50

2nd pressure hPa : 500

Rack travel in m: 12.80...13.00

3rd pressure hPa : -

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100

Speed rpm : 1050

Del.quantity cm3/ : 170.0...174.0

1000 s: (167.0...177.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1100

Speed rpm : 750

Del.quantity cm3/ : 204.0...208.0

1000 s: (201.0...211.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1100

Speed rpm : 1050

Del.quantity cm3/ : 150.0...154.0

1000 s: (147.0...157.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 136.0...138.0

1000 s: (133.0...141.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 e
Edition : 19.10.90
Replaces : 20.7.90
Test oil : ISO-4113

Combination no. : 0 402 640 820

Injection pump
Pump designation : PE12P120A320LS7814-2
EP type number : 0 412 620 824
Governor
Governor design. : RQ750PA966
Governor no. : 0 421 801 535

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 535.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.90...15.00

Del.quantity cm3/ : 31.6...31.8

100 s: (31.3...32.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.6...5.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 750
travel mm : 1.00...1.50
2nd speed rpm : 791
travel mm : 4.30...4.80
3rd speed rpm : 850
travel mm : 11.10...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 316.0...318.0
1000 : (313.0...321.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 76...84

Testing:
1st rack travel in: 13.90
Speed rpm : 755...760
2nd rack travel in: 4.00
Speed rpm : 785...795

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 755...760

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 a 1
Edition : 17.10.90
Replaces : 31.7.90
Test oil : ISO-4113

Combination no. : 0 402 640 821

Injection pump
Pump designation : PE12P120A520LS7814
EP type number : 0 412 620 813
Governor
Governor design. : RQV350...1050PA870-9
Governor no. : 0 421 813 873

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 588.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.00...13.20

Del.quantity cm3/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.3...5.9
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80

2nd speed rpm : 600
travel mm : 3.30...3.80

3rd speed rpm : 900
travel mm : 5.40...5.90

4th speed rpm : 1100
travel mm : 7.60...8.10

5th speed rpm : 1200
travel mm : 9.60...10.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1275
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650
Aneroid pressure h: 1100
Del.quantity : 262.0...265.0
1000 : (259.0...268.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

TORQUE CONTROL

Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 850
Rack travel in m: 13.70...13.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 650
Pressure hPa : 1100
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 650

1st pressure hPa : 500
Rack travel in m: 9.50...9.70

H05

2nd pressure hPa : 700
Rack travel in m: 11.10...11.30
3rd pressure hPa : 1400
Rack travel in m: 13.20...13.30
4th pressure hPa : 1500
Rack travel in m: 13.40...13.60
5th pressure hPa : -
Rack travel in m: 8.20...8.50

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1850
Speed rpm : 1050
Del.quantity cm3/ : 261.0...264.0
1000 s: (258.0...267.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1850
~~Speed~~ rpm : 750
Del.quantity cm3/ : 278.0...282.0
1000 s: (275.0...285.0)
Spread cm3 : -
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 e 2
Edition : 17.10.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 640 822

Injection pump
Pump designation : PE12P120A320LS7814-2
EP type number : 0 412 620 824
Governor
Governor design. : RQ900PA966-1
Governor no. : 0 421 801 550

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 539.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
Rack travel in mm : 19.00...21.00
Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 29.4...29.6

100 s: (29.1...29.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 4.6...5.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 935
travel mm : 4.60...5.10
2nd speed rpm : 1070
travel mm : 13.70...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Del.quantity : 294.0...296.0
1000 : (291.0...299.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 77...85

Testing:

1st rack travel in: 13.50
Speed rpm : 905...910
2nd rack travel in: 4.00
Speed rpm : 940...950
4th rack travel in: 1000
Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 f
Edition : 23.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 640 824
Injection pump
Pump designation : PE12P120A520LS7824-1
EP type number : 0 412 620 825
Governor
Governor design. : RGV250...1150PA977K
Governor no. : 0 421 815 265

Customer-spec. information
Customer : MAN

Engine : D2842LXF

1st version kW : 735.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 13.70...13.80
Del.quantity cm³/ : 30.8...31.0
100 s: (30.5...31.3)
Spread cm³ : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.0...5.4
Del.quantity cm³/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1195
travel mm : 10.10...10.30
2nd speed rpm : 300
travel mm : 1.00...1.20
3rd speed rpm : 550
travel mm : 3.40...4.00
4th speed rpm : 900
travel mm : 7.00...7.40
5th speed rpm : 1450
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1215
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h : 1300
Del.quantity : 308.0...310.0
1000 : (305.0...313.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 295...303

Testing:

1st rack travel in: 12.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 246...254

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 330...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.70...13.80
2nd speed rpm : 700
Rack travel in m: 12.10...12.30
3rd speed rpm : 900
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 1150
Pressure hPa : 1300
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 250

Rack travel in m: 8.90...9.00
3rd pressure hPa : 650
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 700
Del.quantity cm3/ : 256.0...262.0
1000 s: (253.0...265.0)
Aneroid pressure h: 1300
Speed rpm : 900
Del.quantity cm3/ : 285.0...291.0
1000 s: (282.0...294.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 141.0...143.0
1000 s: (138.0...146.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 255.0...275.0
1000 s: (251.0...279.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7024

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t
Edition : 30.11.90
Replaces : 16.2.90
Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump
Pump designation : PE6P120A320LS7808
EP type number : 0 412 626 816
Governor
Governor design. : RQ300/1050PA762-4
Governor no. : 0 421 801 390

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 240.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.7...6.0
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.70...14.90
3rd speed rpm : 800
Rack travel in m: 15.10...15.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.70
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350
Speed rpm : 1050
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 m
Edition : 16.11.90
Replaces : 5.3.90
Test oil : ISO-4113
Combination no. : 0 402 646 872
Injection pump
Pump designation : PE6P120A72ORS7126Z
EP type number : 0 412 626 830
Governor
Governor design. : RQV200...1000PA725-6
Governor no. : 0 421 813 755

Customer spec. information
Customer : SAAB-SCANIA

Engine : DSC11 08

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 1.8...2.2
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60
2nd speed rpm : 350
travel mm : 2.40...3.00
3rd speed rpm : 650
travel mm : 4.40...5.00
4th speed rpm : 1045
travel mm : 8.40...8.60
5th speed rpm : 1150
travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 204.0...206.0
1000 : (201.0...209.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 11.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 225
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 470
Rack travel in m: 12.40...12.50
3rd pressure hPa : 320
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 197.0...205.0
1000 s: (195.0...207.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (-)
Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 9° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Note remarks

Aneroid pressure h: 900
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:

1st rack travel in: 13.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 200
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

Speed rpm : 350...600

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.90...15.10
3rd speed rpm : 1000
Rack travel in m: 15.10...15.30
4th speed rpm : 985
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.20...10.40
2nd pressure hPa : 600
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1250

Rack travel in m: 14.30...14.50
4th pressure hPa : 1350
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 242.0...246.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k1
 Edition : 16.11.90
 Replaces : 12.4.90
 Test oil : ISO-4113
 Combination no. : 0 402 646 894
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQ250/1000PA936
 Governor no. : 0 421 801 507

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 239.0...241.0

1000 : (236.0...244.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70

Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.00...14.10
2nd speed rpm : 1000
Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10

3rd pressure hPa : 310

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 165.0...167.0

1000 s: (162.0...170.0)

BREAKAWAY

1st version

H17

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...6.80

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k4
 Edition : 16.11.90
 Replaces : 17.5.90
 Test oil : ISO-4113

Combination no. : 0 402 646 896

Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RGV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 2.40...3.20

3rd speed rpm : 800
 travel mm : 5.20...5.60

4th speed rpm : 1000
 travel mm : 7.30...7.50

5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 239.0...241.0
1000 : (236.0...244.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.70
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 275...385

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 165.0...167.0
1000 s: (162.0...170.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1025...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 w
Edition : 30.11.90
Replaces : 21.9.90
Test oil : ISO-4113

Combination no. : 0 402 646 902

Injection pump
Pump designation : PE6P130A720RS7197
EP type number : 0 412 636 815
Governor
Governor design. : RQV300...900PA946
Governor no. : 0 421 813 845

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8210.42.151

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

H2O

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 25.5...25.8

100 s: (25.1...26.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.40

2nd speed rpm : 450
travel mm : 2.80...3.40

3rd speed rpm : 700
travel mm : 5.50...5.90

4th speed rpm : 900
travel mm : 7.70...7.90

5th speed rpm : 1200
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 970

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 255.0...258.0

1000 : (251.5...261.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.50
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 320...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 345
Rack travel in m: 12.70...12.80
3rd pressure hPa : 275
Rack travel in m: 11.10...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm³/ : 269.0...276.0
1000 s: (269.0...276.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 181.0...184.0
1000 s: (177.5...187.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...280.0
1000 s: (236.0...284.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.10...5.50
Del.quantity cm³/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 b3
 Edition : 15.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 903
 Injection pump
 Pump designation : PE6P12DA72ORS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RQV200...1000PA725-8
 Governor no. : 0 421 813 885

Customer spec. information
 Customer : SCANIA

Engine : DSC11 30

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 1.8...2.2

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 1.20...1.60

2nd speed rpm : 350

travel mm : 2.40...3.00

3rd speed rpm : 650

travel mm : 4.40...5.00

4th speed rpm : 1045

travel mm : 8.40...8.60

5th speed rpm : 1150

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 240.0...242.0

1000 : (237.0...245.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 225
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 470
Rack travel in m: 13.20...13.30
3rd pressure hPa : 225
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 226.0...234.0
1000 s: (224.0...236.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (-)
Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 7
Edition : 16.11.90
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 402 646 908

Injection pump
Pump designation : PE6P120A320LS7808
EP type number : 0 412 626 816
Governor
Governor design. : RQ300/950PA932-3
Governor no. : 0 421 801 528

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1200

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.8

Testing:

Speed rpm : 200

Minimum rack travel: 7.70

Speed rpm : 300

Rack travel in mm : 5.70...6.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 11.00...11.20

2nd pressure hPa : 550

Rack travel in m: 13.30...13.50

3rd pressure hPa : 1100

Rack travel in m: 14.10...14.20

4th pressure hPa : 1200

Rack travel in m: 14.50...14.70

5th pressure hPa : -

Rack travel in m: 9.40...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350

Speed rpm : 950

Del.quantity cm3/ : 241.0...243.0

1000 s: (238.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1350

Speed rpm : 800

Del.quantity cm3/ : 239.0...244.0

1000 s: (236.0...247.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 13.00...13.50

Remarks:

:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L
Edition : 16.11.90
Replaces : 20.7.90
Test oil : ISO-4113

Combination no. : 0 402 646 912

Injection pump
Pump designation : PE6P120A320RS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQ250/1000PA936-1
Governor no. : 0 421 801 508

Customer-spec. information
Customer : DAF

Engine : WS 268

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.50...15.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del. quantity cm³/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm³/ : 3.1...3.7

100 s: (2.8...4.0)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 16.4

Testing:

1st rack travel in: 14.00
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 99.0...109.0
1000 s: (95.0...113.0)

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 164.0...168.0
1000 s: (162.0...170.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L1
Edition : 23.11.90
Replaces : 6.7.90
Test oil : ISO-4113

Combination no. : 0 402 646 913

Injection pump
Pump designation : PE6P120A320RS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQV250...1000PA939
Governor no. : 0 421 813 829

Customer-spec. information
Customer : DAF

Engine : WS 268

1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.50...15.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.6...7.0
Del.quantity cm³/ : 3.1...3.7
100 s: (2.8...4.0)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.80...8.00
2nd speed rpm : 250
travel mm : 0.70...1.10
3rd speed rpm : 400
travel mm : 2.50...3.10
4th speed rpm : 700
travel mm : 4.50...4.90
5th speed rpm : 1350
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1125
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 235.0...237.0
1000 : (232.0...240.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 14.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 99.0...109.0
1000 s: (95.0...113.0)
Spread cm3 : 10.00
1000 s: (14.00)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 164.0...168.0
1000 s: (162.0...170.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 g
Edition : 05.11.90
Replaces : 17.9.90
Test oil : ISO-4113

Combination no. : 0 402 646 914

Injection pump
Pump designation : PE6P130A72ORS7197
EP type number : 0 412 636 815
Governor
Governor design. : RQ300/900PA968
Governor no. : 0 421 801 540

Customer spec. information
Customer : IVECO-UNIC

Engine : 8210.42.153

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 105

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

J02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 25.5...25.8

100 s: (25.1...26.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.5

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 255.0...258.0

1000 : (251.5...261.5)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50

Speed rpm : 945...960

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack trave: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.50...13.60
2nd speed rpm : 600
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 345
Rack travel in m: 12.70...12.80
3rd pressure hPa : 275
Rack travel in m: 11.10...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm3/ : 269.0...276.0
1000 s: (269.0...276.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 181.0...184.0
1000 s: (177.5...187.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 945...960

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...270.0
1000 s: (236.0...274.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm3 : 10.00
1000 s: (14.00)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 o
Edition : 23.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump
Pump designation : PE6P120A320LS7834
EP type number : 0 412 626 841
Governor
Governor design. : RQ300/950PA971
Governor no. : 0 421 801 543

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm³/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 219.0...221.0

1000 : (216.0...224.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.90
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.50...6.80
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.50...11.70
2nd pressure hPa : 550
Rack travel in m: 13.90...14.10
3rd pressure hPa : 1350
Rack travel in m: 14.80...15.00 *
4th pressure hPa : -
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 234.0...236.0
1000 s: (231.0...239.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 241.0...244.0
1000 s: (238.0...247.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 8
 Edition : 05.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 919
 Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQ300/950PA762-13
 Governor no. : 0 421 801 544

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 21.6...21.8

100 s: (21.3...22.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del.quantity : 216.0...218.0

1000 : (213.0...221.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 14.30
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.30...10.50
2nd pressure hPa : 500
Rack travel in m: 13.00...13.20
3rd pressure hPa : 950
Rack travel in m: 14.20...14.40
4th pressure hPa : 1150
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 9.20...9.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1350
Speed rpm : 1050
Del.quantity cm3/ : 243.0...245.0
1000 s: (240.0...248.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1350
Speed rpm : 750
Del.quantity cm3/ : 239.0...243.0
1000 s: (236.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.30
Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 9
 Edition : 30.11.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 920

Injection pump
 Pump designation : PE6P120A320S7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQ300/950PA971-1
 Governor no. : 0 421 801 547

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 950

Del.quantity : 221.0...223.0

1000 : (218.0...226.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.10
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 10.70...10.90
2nd pressure hPa : 600
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1150
Rack travel in m: 14.20...14.40
4th pressure hPa : 1250
Rack travel in m: 14.70...14.90
5th pressure hPa : -
Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1550
Speed rpm : 950
Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1550
Speed rpm : 750
Del.quantity cm3/ : 242.0...246.0
1000 s: (239.0...249.0)

Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 9,6 p
Edition : 05.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 924

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQ300/950PA971-3
Governor no. : 0 421 801 557

Customer spec. information
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 250.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.7...6.0
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 10.90...11.10
2nd pressure hPa : 640
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1240
Rack travel in m: 14.40...14.60 *
4th pressure hPa : 1500
Rack travel in m: 15.00...15.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700
Speed rpm : 950
Del.quantity cm3/ : 252.0...254.0
1000 s: (249.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1700
Speed rpm : 800
Del.quantity cm3/ : 263.0...265.0
1000 s: (260.0...268.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,1 b
Edition : 30.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump
Pump designation : PE6P120A320LS7837
EP type number : 0 412 626 842
Governor
Governor design. : RQV300...950PA797-20
Governor no. : 0 421 813 893

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 252.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.2
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 567
travel mm : 4.40...4.90
3rd speed rpm : 780
travel mm : 6.10...6.60
4th speed rpm : 1009
travel mm : 8.30...8.80
5th speed rpm : 1190
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1025
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h : 900
Del.quantity : 227.0...229.0
1000 : (224.0...232.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.40
Speed rpm : 300
Rack travel in mm : 5.90...6.20

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 800
Rack travel in m: 15.70...15.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 11.30...11.50
2nd pressure hPa : 640
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1240

Rack travel in m: 14.40...14.60 *
4th pressure hPa : 1360
Rack travel in m: 15.00...15.20
5th pressure hPa : -
Rack travel in m: 8.80...9.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700
Speed rpm : 950
Del.quantity cm3/ : 252.0...254.0
1000 s: (249.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1700
Speed rpm : 800
Del.quantity cm3/ : 263.0...265.0
1000 s: (260.0...268.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 135.0...137.0
1000 s: (132.0...140.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Note remarks

TEST BENCH REQUIREMENTS

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.80...14.00

Del.quantity cm³/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm³ : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50

```
2nd speed      rpm      : 617
travel mm      : 5.00...5.50
```

3rd speed rpm : 780
travel mm : 6.10...6.60

```
4th speed      rpm      : 1009
travel mm      : 8.30...8.80
```

```
5th speed    rpm : 1092
travel mm    : 9.80...10.30
```

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 219.0...221.0
1000 : (216.0...224.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 53...61

Testing:

Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.60...10.80
2nd pressure hPa : 550
Rack travel in m: 12.60...12.80
3rd pressure hPa : 1350
Rack travel in m: 13.90...14.10 *
4th pressure hPa : 1500
Rack travel in m: 14.30...14.50

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 234.0...236.0
1000 s: (231.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 241.0...244.0
1000 s: (238.0...247.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...127.0
1000 s: (122.0...130.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 q
Edition : 23.11.90
Replaces : 31.7.90
Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQ300/950PA762-7
Governor no. : 0 421 801 480

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 25.4...25.6
100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 254.0...256.0
1000 : (251.0...259.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.2

Testing:

Speed rpm : 200

Minimum rack travel: 7.80

Speed rpm : 300

Rack travel in mm : 5.90...6.50

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90

2nd speed rpm : 950

Rack travel in m: 15.20...15.40

3rd speed rpm : 800

Rack travel in m: 15.50...15.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 12.20...12.40

2nd pressure hPa : 700

Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200

Rack travel in m: 14.80...15.00

4th pressure hPa : 1500

Rack travel in m: 15.50...15.70

5th pressure hPa : -

Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 950

Del.quantity cm3/ : 270.0...273.0

1000 s: (267.0...276.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1600

Speed rpm : 800

Del.quantity cm3/ : 270.0...274.0

1000 s: (267.0...277.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 145.0...147.0

1000 s: (142.0...150.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k 1
 Edition : 23.11.90
 Replaces : 31.7.90
 Test oil : ISO-4113
 Combination no. : 0 402 648 881
 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQV300...950PA797-13
 Governor no. : 0 421 813 841

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40

2nd speed rpm : 700
 travel mm : 5.50...6.00

3rd speed rpm : 1100
 travel mm : 8.30...8.80

4th speed rpm : 1090
 travel mm : 9.70...10.20

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 254.0...256.0
1000 : (251.0...259.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:
1st rack travel in: 14.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 12.00...12.20
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200
Rack travel in m: 14.80...15.00
4th pressure hPa : 1500
Rack travel in m: 15.50...15.70
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 270.0...273.0
1000 s: (267.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTU 14,6 a1
Edition : 16.11.90
Replaces : 31.7.90
Test oil : ISO-4113

Combination no. : 0 402 648 884

Injection pump
Pump designation : PE8P120A320LS7830
EP type number : 0 412 628 844
Governor
Governor design. : RQV350...1150PA870-10
Governor no. : 0 421 813 879

Customer-spec. information
Customer : MTU

Engine : 8V 183 TE92

1st version kW : 490.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
Rack travel in mm : 19.50...21.00
Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 31.1...31.3
100 s: (30.8...31.6)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.6
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.30...1.80
2nd speed rpm : 454
travel mm : 3.30...3.80
3rd speed rpm : 960
travel mm : 5.30...5.80
4th speed rpm : 1206
travel mm : 7.90...8.40
5th speed rpm : 1380
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1275
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 2000
Del.quantity : 311.0...313.0
1000 : (308.0...316.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 13.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.10...7.30

Measurement

Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 8.30...8.40
2nd pressure hPa : 1200
Rack travel in m: 12.50...12.80

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

J21

1st version

Aneroid pressure h: 2000
Speed rpm : 750
Del.quantity cm3/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 1150
Del.quantity cm3/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 320.0...340.0
1000 s: (316.0...344.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o
Edition : 15.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 893
Injection pump
Pump designation : PE8P120A320LS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQ300/950PA971-2
Governor no. : 0 421 801 548

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
: (5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 221.0...223.0

1000 : (218.0...226.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.80

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.50

2nd speed rpm : 950

Rack travel in m: 14.40...14.60

3rd speed rpm : 800

Rack travel in m: 14.90...15.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 9.90...10.10

2nd pressure hPa : 600

Rack travel in m: 13.30...13.50

3rd pressure hPa : 1100

Rack travel in m: 14.70...14.90 *

4th pressure hPa : -

Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm3/ : 222.0...225.0

1000 s: (219.0...228.0)

Spread cm3 : 8.00

1000 s: (12.)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/ : 234.0...238.0

1000 s: (231.0...241.0)

Spread cm3 : 8.00

1000 s: (12.00)

Speed rpm : 500

Del.quantity cm3/ : 122.0...124.0

1000 s: (119.0...127.0)

Spread cm3 : 8.00

1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,8 o 1
Edition : 23.11.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 894

Injection pump
Pump designation : PE8P120A32OLS7835
EP type number : 0 412 628 847
Governor
Governor design. : RQV300...950PA797-18
Governor no. : 0 421 813 886

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
(5.45...5.65)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/ : 22.1...22.3
100 s: (21.8...22.6)

Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.4...7.0
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.50
2nd speed rpm : 567
travel mm : 4.40...4.90
3rd speed rpm : 780
travel mm : 6.10...6.60
4th speed rpm : 1009
travel mm : 8.30...8.80
5th speed rpm : 1092
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 980
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 221.0...223.0
1000 : (218.0...226.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 122...130

Testing:
1st rack travel in: 13.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...7.00

CONSTANT REGULATION
Speed rpm : 250...360

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 14.40...14.60
2nd speed rpm : 800
Rack travel in m: 14.90...15.10
3rd speed rpm : 850
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.60...14.80

Measurement
Speed 1/min : 600

1st pressure hPa : 250

J25

Rack travel in m: 10.00...10.20
2nd pressure hPa : 600
Rack travel in m: 13.30...13.50
3rd pressure hPa : 1100
Rack travel in m: 14.70...14.90 *
4th pressure hPa : 1200
Rack travel in m: 14.90...15.10
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm³/ : 222.0...225.0
1000 s: (219.0...228.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del.quantity cm³/ : 234.0...238.0
1000 s: (231.0...241.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 122.0...124.0
1000 s: (119.0...127.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 21,6 c
Edition : 16.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 670 808
Injection pump
Pump designation : PE12P120A520/5RS7212
EP type number : 0 412 620 823
Governor
Governor design. : RSU325...1150POA359
Governor no. : 0 421 829 108

Customer-spec. information
Customer : MWM

Engine : TBD234V12

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 019
Opening
pressure, bar : 207...210
Orifice plate
diameter mm : 0,8
Test lines : 1 680 750 067
Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
: (4.55...4.75)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 9- 10- 5- 6-
11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-
180-210-240-270-300-
330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 26.0...26.2

100 s: (25.8...26.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 6.9...7.1
Del.quantity cm3/ : 3.0...4.0
100 s: (2.7...4.3)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

RATED SPEED

1st version

Control lever

position degrees: 106...114

Testing:

1st rack travel in: 12.40

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1260...1290

4th rack travel in: 14.40

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 440...500

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1250
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 625

Rack travel in m: 12.00...12.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...370.0
1000 s: (-)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 30.0...40.0
1000 s: (27.0...43.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

:

* = Element disconnected at idle for
cylinders 2, 4, 6, 8, 10 and 12.

Hydraulic latching of starting
delivery.

J27

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.35 bar...0.45 bar.

Full-load delivery not known. Set
according to engine test report.

Test specifications upon request.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 t
Edition : 17.10.90
Replaces : 16.8.90
Test oil : ISO-4113
Combination no. : 0 402 736 805
Injection pump
Pump designation : PES6P120A120RS7206
EP type number : 0 412 726 835
Governor
Governor design. : RQV350..1100PA924-5K
Governor no. : 0 421 815 250

Customer-spec. information
Customer : CUMMINS

Engine : 6CTAA

1st version kw : 202.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 2.3...2.9

100 s: (2.1...3.1)

Spread cm³ : 0.7

100 s: (1.1)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.10...1.50

2nd speed rpm : 550
travel mm : 3.40...4.00

3rd speed rpm : 900
travel mm : 6.10...6.70

4th speed rpm : 1150
travel mm : 8.40...8.60

5th speed rpm : 1250
travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 158.0...160.0
1000 : (155.0...163.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 11.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 250
Minimum rack travel: 6.80
Speed rpm : 350
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.10...12.20
2nd speed rpm : 600
Rack travel in m: 11.10...11.30
3rd speed rpm : 800
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 600
Rack travel in m: 11.10...11.30
3rd pressure hPa : 300

Rack travel in m: 8.70...9.10

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 174.0...180.0
1000 s: (171.0...183.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 105.0...109.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 235.0...255.0
1000 s: (231.0...259.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 23.0...29.0
1000 s: (21.0...31.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

: C.D.C. # 321182
Start-of delivery mark/lock = 7.5°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w
Edition : 15.11.90
Replaces : 8.8.90
Test oil : ISO-4113

Combination no. : 0 402 736 806

Injection pump
Pump designation : PES6P110A120RS7213
EP type number : 0 412 716 804
Governor
Governor design. : RQV400...1250PA964K
Governor no. : 0 421 815 252

Customer-spec. information
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.5
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
Rack travel in mm : 15.50...15.60
Del.quantity cm3/ : 16.5...16.7
100 s: (16.2...17.0)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 400.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 3.2...3.8
100 s: (3.0...4.0)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 0.70...1.10
2nd speed rpm : 400
travel mm : 1.40...1.60
3rd speed rpm : 600
travel mm : 2.90...3.30
4th speed rpm : 1300
travel mm : 7.20...7.40
5th speed rpm : 1500
travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 1200
Del.quantity : 165.5...167.5
1000 : (162.5...170.5)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 14.50
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1470...1500
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 13...21

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 15.50...15.60
2nd speed rpm : 800
Rack travel in m: 14.40...14.60
3rd speed rpm : 700
Rack travel in m: 13.90...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 400
Rack travel in m: 9.70...9.80
3rd pressure hPa : 800
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 295 (305)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 176.0...182.0
1000 s: (173.0...185.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 82.5...86.5
1000 s: (80.5...88.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.50
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: C.D.C # 3913440
Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r
Edition : 15.11.90
Replaces : 8.11.90
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump
Pump designation : PES6P110A120RS7214
EP type number : 0 412 716 805
Governor
Governor design. : RQV350...1100PA964-1
K
Governor no. : 0 421 815 253

Customer spec. information
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 115...125

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
: (4.30...4.50)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 2.7...3.3
100 s: (2.5...3.5)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 1.80...2.00
2nd speed rpm : 450
travel mm : 3.10...3.50
3rd speed rpm : 600
travel mm : 5.10...5.50
4th speed rpm : 1000
travel mm : 8.10...8.30
5th speed rpm : 1200
travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 1500
Del.quantity : 206.0...208.0
1000 : (203.0...211.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 64...72

Testing:
1st rack travel in: 14.40
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 15.70...15.80
2nd speed rpm : 650
Rack travel in m: 13.70...14.10
3rd speed rpm : 1100
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1050
Pressure hPa : 1500
Rack travel mm : 15.70...15.80

Measurement
Speed 1/min : 1050

1st pressure hPa : -
Rack travel in m: 8.40...8.80
2nd pressure hPa : 340
Rack travel in m: 10.20...10.30
3rd pressure hPa : 840
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del. quantity cm³/ : 197.5...203.5
 1000 s: (194.5...206.5)
Spread cm³ : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 98.0...102.0
 1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 160.0...180.0
 1000 s: (155.0...185.0)
Rack travel in mm : 11.40...12.40

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 27.0...33.0
 1000 s: (25.0...35.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks: : C.D.C. # 3916627

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w 1
 Edition : 15.11.90
 Replaces : 8.11.90
 Test oil : ISO-4113

Combination no. : 0 402 736 810

Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964-2
 K
 Governor no. : 0 421 815 254

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 1.40...1.60

3rd speed rpm : 600
 travel mm : 2.90...3.30

4th speed rpm : 1300
 travel mm : 7.20...7.40

5th speed rpm : 1500
 travel mm : 9.10...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del.quantity : 159.0...161.0
 1000 : (156.0...164.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 13.80
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 14.80...14.90
2nd speed rpm : 800
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 14.80...14.90

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 415
Rack travel in m: 10.20...10.30
3rd pressure hPa : 740
Rack travel in m: 13.00...13.40

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm3/ : 158.0...164.0
1000 s: (155.0...167.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 95.5...99.5
1000 s: (93.5...101.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3919090

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 3
 Edition : 15.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 812
 Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-4
 K
 Governor no. : 0 421 815 256

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 156.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 1200
 Del.quantity : 147.5...149.5
 1000 : (144.5...152.5)

Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.60
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1375...1405
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.60...12.70
2nd speed rpm : 650
Rack travel in m: 11.20...11.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 1200

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 225
Rack travel in m: 9.20...9.30
3rd pressure hPa : 515
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 265 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 152.5...158.5
 1000 s: (149.5...161.5)
Spread cm3 : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 90.0...94.0
 1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
 1000 s: (140.0...170.0)
Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 27.0...33.0
 1000 s: (25.0...35.0)
Spread cm3 : 8.00
 1000 s: (12.00)

Remarks: : C.D.C. # 3917088

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 4
 Edition : 15.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 813
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-5
 K
 Governor no. : 0 421 815 257

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 600
 travel mm : 5.10...5.50

4th speed rpm : 1000
 travel mm : 8.10...8.30

5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 186.5...188.5
 1000 : (183.5...191.5)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.50
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 650
Rack travel in m: 13.50...13.70
3rd speed rpm : 500
Rack travel in m: 12.70...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.40...8.80
2nd pressure hPa : 285
Rack travel in m: 9.70...9.80
3rd pressure hPa : 700
Rack travel in m: 12.70...13.10

START CUT-OUT

Speed 1/min : 260 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 198.0...204.0
1000 s: (195.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 98.0...102.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 10.80...11.80

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3916628

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 1
 Edition : 15.11.90
 Replaces : 8.11.90
 Test oil : ISO-4113
 Combination no. : 0 402 736 814
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RGV350...1200PA964-6
 K
 Governor no. : 0 421 815 258

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.10...3.50
 3rd speed rpm : 700
 travel mm : 5.90...6.30
 4th speed rpm : 1200
 travel mm : 9.00...9.20
 5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 1200
 Del.quantity : 183.0...185.0
 1000 : (180.0...188.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 5
 Edition : 15.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 815
 Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1000PA964-7
 K
 Governor no. : 0 421 815 259

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 194.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm³/ : 2.7...3.3
 100 s: (2.5...3.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.60...1.80
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 600
 travel mm : 5.20...5.60
 4th speed rpm : 1000
 travel mm : 8.70...8.90
 5th speed rpm : 1150
 travel mm : 10.10...10.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1500
 Del.quantity : 217.0...219.0
 1000 : (214.0...222.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 14.30
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 650
Rack travel in m: 14.00...14.40
3rd speed rpm : 1000
Rack travel in m: 15.30...15.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1500
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.40...8.80
2nd pressure hPa : 340
Rack travel in m: 10.20...10.30
3rd pressure hPa : 840
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 650
Del.quantity cm3/ : 211.0...217.0
1000 s: (208.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 98.0...102.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.30
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 10.90...11.90

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3916629

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 2
 Edition : 15.11.90
 Replaces : 8.11.90
 Test oil : ISO-4113
 Combination no. : 0 402 736 816
 Injection pump
 Pump designation : PES6P110A120RS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1200PA964-8
 K
 Governor no. : 0 421 815 264

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 115...125

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.6...5.8
 Del.quantity cm3/ : 2.7...3.3
 100 s: (2.5...3.5)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 450
 travel mm : 3.10...3.50

3rd speed rpm : 700
 travel mm : 5.90...6.30

4th speed rpm : 1200
 travel mm : 9.00...9.20

5th speed rpm : 1400
 travel mm : 10.70...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 190.0...192.0
 1000 : (187.0...195.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.20
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.70...14.80
2nd speed rpm : 650
Rack travel in m: 12.50...12.90
3rd speed rpm : 1200
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 260
Rack travel in m: 9.60...9.70
3rd pressure hPa : 710
Rack travel in m: 12.80...13.20

START CUT-OUT

Speed 1/min : 265 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 181.0...187.0
1000 s: (178.0...190.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 90.0...94.0
1000 s: (88.0...96.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 10.70...11.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3916626

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

Bow dimension:
Sliding-sleeve position = 37.0 mm

Note remarks

Testing:

1st rack travel in: 12.40
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.40...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : 230
Rack travel in m: 11.70...11.90
2nd pressure hPa : 370
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600
Del.quantity cm³/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a3
Edition : 15.11.90
Replaces : 4.9.90
Test oil : ISO-4113

Combination no. : 0 402 746 852

Injection pump
Pump designation : PES6P120A720RS7157
EP type number : 0 412 726 814
Governor
Governor design. : RQV325...900PA909K
Governor no. : 0 421 815 210

Customer-spec. information
Customer : MACK TRUCKS

Engine : E7-400

1st version kW : 298.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
(2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.20
3rd speed rpm : 650
travel mm : 5.60...5.80
4th speed rpm : 900
travel mm : 8.30...8.50
5th speed rpm : 1100
travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 275.0...277.0
1000 : (272.0...280.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 14.80
Speed rpm : 940...970
2nd rack travel in: 4.00
Speed rpm : 1115...1125
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.40
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.80...15.90

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 325
Rack travel in m: 10.20...10.30
3rd pressure hPa : 790
Rack travel in m: 13.80...14.20

START CUT-OUT

K21

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 302.5...308.5
1000 s: (299.5...311.5)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 850
Del.quantity cm3/ : 159.0...161.0 *
1000 s: (136.5...157.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80
Speed rpm : 940...970

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P6

Bow dimension:

Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a4
 Edition : 15.11.90
 Replaces : 4.9.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 853
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909-1K
 Governor no. : 0 421 815 211

Customer spec. information
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 23.1...23.3

100 s: (22.9...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 231.5...233.5

1000 : (229.5...235.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.60
Speed rpm : 940...970
2nd rack travel in: 4.00
Speed rpm : 1090...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.60...13.70
2nd speed rpm : 625
Rack travel in m: 13.30...13.50
3rd speed rpm : 500
Rack travel in m: 0.00...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50
3rd pressure hPa : 685
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

K23

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 263.0...269.0
1000 s: (260.0...272.0)
Spread cm³ : 8.00
1000 s: (12.0)
Speed rpm : 850
Del.quantity cm³/ : 159.0...161.0 *
1000 s: (136.5...157.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 940...970

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...215.0
1000 s: (165.0...225.0)
Rack travel in mm : 9.00...11.00


LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5185-P2

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.



Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h3
 Edition : 15.11.90
 Replaces : 5.10.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 887
 Injection pump
 Pump designation : PES6P120A720RS7200
 EP type number : 0 412 726 833
 Governor
 Governor design. : RQV325...975PA944-2K
 Governor no. : 0 421 815 237

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300A

1st version kW : 224.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 11.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 950
 travel mm : 7.90...8.10
 4th speed rpm : 1200
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Aneroid pressure h: 1200
 Del.quantity : 225.0...227.0
 1000 : (222.0...230.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:

1st rack travel in: 12.00
Speed rpm : 1015...1045
2nd rack travel in: 4.00
Speed rpm : 1180...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 13.00...13.10
2nd speed rpm : 600
Rack travel in m: 12.10...12.30
3rd speed rpm : 500
Rack travel in m: 11.30...11.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 7.90...8.30
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50
3rd pressure hPa : 640
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 240.5...246.5
1000 s: (237.5...249.5)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (180.5...207.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 149.0...153.0
1000 s: (147.0...155.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1015...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P8

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 k
Edition : 16.11.90
Replaces : 10.8.90
Test oil : ISO-4113

Combination no. : 0 402 746 889

Injection pump
Pump designation : PES6P120A720RS7179
EP type number : 0 412 726 826
Governor
Governor design. : RQV350...1000PA917-1
K
Governor no. : 0 421 815 236

Customer-spec. information
Customer : FNH

Engine : 7.8L

1st version kW : 160.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 072

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : +.35...4.45
: (4.30...4.50)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 15.9...16.1
100 s: (15.6...16.4)

Spread cm3 : 0.7
100 s: (1.1)

2nd speed rpm : 350.0
Rack travel in mm : 5.0...5.4
Del.quantity cm3/ : 2.0...2.6
100 s: (1.8...2.8)
Spread cm3 : 0.5
100 s: (0.9)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 2.10...2.40
2nd speed rpm : 450
travel mm : 3.50...3.90
3rd speed rpm : 800
travel mm : 6.90...7.30
4th speed rpm : 1000
travel mm : 8.60...8.80
5th speed rpm : 1200
travel mm : 10.70...11.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1230
Rack travel in mm : 6.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1400
Del.quantity : 159.0...161.0
1000 : (156.0...164.0)
Spread cm3 : 7.00
1000 : (11.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.50
Speed rpm : 1050...1060
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 350
Rack travel in mm : 5.00...5.40

CONSTANT REGULATION
Speed rpm : 320...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 750
Rack travel in m: 13.10...13.30
3rd speed rpm : 650
Rack travel in m: 12.50...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 750
Pressure hPa : 1400
Rack travel mm : 13.10...13.30

Measurement
Speed 1/min : 750

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 310

L01

Rack travel in m: 9.60...9.70
3rd pressure hPa : 620
Rack travel in m: 11.80...12.20

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 187.0...193.0
1000 s: (184.0...196.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 101.0...103.0
1000 s: (98.0...106.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1050...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...180.0
1000 s: (146.0...186.0)
Rack travel in mm : 10.90...11.50

Remarks:
: FNH # E9HN-9A543-PA

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h
Edition : 15.11.90
Replaces : 8.8.90
Test oil : ISO-4113
Combination no. : 0 402 746 890
Injection pump
Pump designation : PES6P120A72ORS7200
EP type number : 0 412 726 833
Governor
Governor design. : RQV325...875PA944-5K
Governor no. : 0 421 815 240

Customer-spec. information
Customer : MACK TRUCKS

Engine : EM7-275

1st version kW : 202.0
Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 11.00...13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.8...5.0
Del.quantity cm³/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm³ : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 3.30...3.70
3rd speed rpm : 700
travel mm : 7.90...8.30
4th speed rpm : 900
travel mm : 9.40...9.60
5th speed rpm : 1050
travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 1200
Del.quantity : 235.5...237.5
1000 : (232.5...240.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 12.20
Speed rpm : 915...945
2nd rack travel in: 4.00
Speed rpm : 1065...1075
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.20...13.30
2nd speed rpm : 510
Rack travel in m: 13.80...14.00
3rd speed rpm : 600
Rack travel in m: 13.80...14.00
4th speed rpm : 450
Rack travel in m: 13.10...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 310
Rack travel in m: 10.10...10.20
3rd pressure hPa : 635
Rack travel in m: 12.50...12.90

START CUT-OUT

L03

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 309.0...315.0
1000 s: (306.0...318.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (150.0...172.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 155.5...159.5
1000 s: (153.5...161.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 915...945

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P4

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test

bench: setting for test equipment,
check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h4
Edition : 15.11.90
Replaces : 17.9.90
Test oil : ISO-4113

Combination no. : 0 402 746 891

Injection pump
Pump designation : PES6P120A72ORS7200
EP type number : 0 412 726 833
Governor
Governor design. : RQV325...875PA944-6K
Governor no. : 0 421 815 241

Customer spec. information
Customer : MACK TRUCKS

Engine : EM7-250

1st version kW : 187.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 22...24

L05

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 11.00...13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.8...5.0
Del.quantity cm3/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 3.30...3.70
3rd speed rpm : 700
travel mm : 7.90...8.30
4th speed rpm : 900
travel mm : 9.40...9.60
5th speed rpm : 1050
travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 1200
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 11.50
Speed rpm : 915...945
2nd rack travel in: 4.00
Speed rpm : 1045...1055
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.50...12.60
2nd speed rpm : 510
Rack travel in m: 13.40...13.60
3rd speed rpm : 600
Rack travel in m: 13.40...13.60
4th speed rpm : 450
Rack travel in m: 12.70...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 285
Rack travel in m: 10.00...10.10
3rd pressure hPa : 570
Rack travel in m: 12.10...12.50

START CUT-OUT

L06

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 291.5...297.5
1000 s: (288.5...300.5)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (150.0...172.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 915...945

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P2

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,

check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h5
Edition : 15.11.90
Replaces : 5.10.90
Test oil : ISO-4113
Combination no. : 0 402 746 892
Injection pump
Pump designation : PES6P120A72ORS7200
EP type number : 0 412 726 833
Governor
Governor design. : RQV325...975PA944-7K
Governor no. : 0 421 815 242

Customer-spec. information
Customer : MACK TRUCKS

Engine : E7-250A

1st version kw : 180.0
Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 11.00...13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.8...5.0
Del.quantity cm3/ : 4.0...4.6
100 s: (3.8...4.8)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 2.80...3.20
3rd speed rpm : 950
travel mm : 7.90...8.10
4th speed rpm : 1200
travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 975
Aneroid pressure h: 1200
Del.quantity : 205.5...207.5
1000 : (202.5...210.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 11.30
Speed rpm : 1015...1045
2nd rack travel in: 4.00
Speed rpm : 1175...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.30...12.40
2nd speed rpm : 600
Rack travel in m: 12.20...12.40
3rd speed rpm : 800
Rack travel in m: 12.40...12.60
4th speed rpm : 500
Rack travel in m: 11.40...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 330
Rack travel in m: 9.70...9.80
3rd pressure hPa : 570
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 250 (255)

L09

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 233.0...239.0
1000 s: (230.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (150.0...172.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1015...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P6

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.



Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h2
Edition : 15.11.90
Replaces : 17.9.90
Test oil : ISO-4113

Combination no. : 0 402 746 896

Injection pump
Pump designation : PES6P120A720RS7200
EP type number : 0 412 726 833
Governor
Governor design. : RQV325...900PA944-11
K
Governor no. : 0 421 815 260

Customer-spec. information
Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85
(2.70...2.90)
Rack travel in mm : 11.00...13.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 335.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 3.3...3.9
100 s: (3.1...4.1)

Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.40...1.60
2nd speed rpm : 450
travel mm : 2.80...3.20
3rd speed rpm : 700
travel mm : 6.00...6.40
4th speed rpm : 900
travel mm : 8.50...8.70
5th speed rpm : 1050
travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 277.5...279.5
1000 : (274.5...282.5)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 13.50
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.50...14.60
2nd speed rpm : 625
Rack travel in m: 13.60...13.80
3rd speed rpm : 800
Rack travel in m: 14.00...14.20
4th speed rpm : 675
Rack travel in m: 13.60...13.80
5th speed rpm : 500
Rack travel in m: 11.90...12.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 400
Rack travel in m: 9.80...9.90
3rd pressure hPa : 775

Rack travel in m: 12.70...13.10

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 290.0...296.0
1000 s: (287.0...299.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (180.5...207.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 335
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 33.0...39.0
1000 s: (31.0...41.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P12

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm

* This test specification applies only

to the engine/nozzle-and-holder
assemblies on an injection-pump test
bench: setting for test equipment,
check value for engine equipment.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h1
 Edition : 15.11.90
 Replaces : 5.10.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 897
 Injection pump
 Pump designation : PES6P120A72ORS7200
 EP type number : 0 412 726 833
 Governor
 Governor design. : RQV325...875PA944-12
 K
 Governor no. : 0 421 815 261

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 11.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875
 Rack travel in mm : 14.00...14.10
 Del.quantity cm3/ : 25.0...25.2
 100 s: (24.7...25.5)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 5.1...5.5
 Del.quantity cm3/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60
 2nd speed rpm : 450
 travel mm : 3.30...3.70
 3rd speed rpm : 700
 travel mm : 7.90...8.30
 4th speed rpm : 900
 travel mm : 9.40...9.60
 5th speed rpm : 1050
 travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 250.0...252.0
 1000 : (247.0...255.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 13.00
Speed rpm : 915...945
2nd rack travel in: 4.00
Speed rpm : 1075...1085
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 5.10...5.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 14.00...14.10
2nd speed rpm : 510
Rack travel in m: 14.70...14.90
3rd speed rpm : 575
Rack travel in m: 14.70...14.90
4th speed rpm : 450
Rack travel in m: 13.80...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 370
Rack travel in m: 10.30...10.40
3rd pressure hPa : 760
Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 328.0...334.0
1000 s: (325.0...337.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 875
Del.quantity cm3/ : 199.0...201.0 *
1000 s: (159.5...183.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 915...945

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P10

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:

Sliding-sleeve position = 37.0 mm
* This test specification applies only
to the engine/nozzle-and-holder
assemblies on an injection-pump test

bench: setting for test equipment,
check value for engine equipment.

2



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 j
Edition : 19.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 899
Injection pump
Pump designation : PES6P120A720RS7222
EP type number : 0 412 726 839
Governor
Governor design. : RQV325...900PA909-1K
Governor no. : 0 421 815 211

Customer-spec. information
Customer : MACK

Engine : E7-350 4VH

1st version kW : 261.0
Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 23.1...23.3

100 s: (22.8...23.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 4.0...4.6
100 s: (3.7...4.9)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.20
3rd speed rpm : 650
travel mm : 5.60...5.80
4th speed rpm : 900
travel mm : 8.30...8.50
5th speed rpm : 1100
travel mm : 10.30...10.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 231.5...233.5
1000 : (228.5...236.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.60...13.70
2nd speed rpm : 625
Rack travel in m: 13.30...13.50
3rd speed rpm : 500
Rack travel in m: 0.00...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50

3rd pressure hPa : 685
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 263.0...269.0
1000 s: (260.0...272.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 12.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...215.0
1000 s: (165.0...225.0)
Rack travel in mm : 9.00...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (37.0...49.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5185-P2

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Bow dimension:
Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 K 6
Edition : 14.09.90
Replaces : 05.11.86
Test oil : ISO-4113

Combination no. : 0 403 446 180

Injection pump
Pump designation : PES6MW100/32ORS1016
EP type number : 0 413 406 010
Governor
Governor design. : RQV300...1300MW25-6
Governor no. : 0 420 083 115

Customer-spec. information
Customer : RVI

Engine : MIDR-062-12-I

1st version kW : 130.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 021

Inlet press., bar : 2.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 173...176

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.30...6.40

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.50

Speed rpm : 1350...1370

2nd rack travel in: 4.00

Speed rpm : 1480...1510

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6
Speed rpm : 300
Rack travel in mm : 6.30...6.40
Speed rpm : 200
Maximum rack travel: 3.70

CONSTANT REGULATION
Speed rpm : 325...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 9.90...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 11.50...11.60
Rack travel in m: 9.30...9.40
3rd pressure hPa : 265
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm³/ : 88.0...92.0
1000 s: (86.0...94.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1350...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.40
Del.quantity cm³/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 71
 Edition : 16.11.90
 Replaces : 16.02.90
 Test oil : ISO-4113

Combination no. : 0 403 446 226

Injection pump
 Pump designation : PES6MW100/720RS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQ300/1300MW105
 Governor no. : 0 420 082 039

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1360

travel mm : 7.20...7.40

3rd speed rpm : 550

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Setting point:

Speed rpm : 1200
Rack travel in mm : 15.5

Testing:

1st rack travel in: 13.60
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.60...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 10.90...11.10
2nd pressure hPa : 500
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1000
Rack travel in m: 14.60...14.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm3/ : 111.0...115.0
1000 s: (109.0...117.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 65
 Edition : 16.11.90
 Replaces : 31.08.90
 Test oil : ISO-4113
 Combination no. : 0 403 446 259
 Injection pump
 Pump designation : PES6MW100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RQV300...1300MW68-2
 Governor no. : 0 420 083 224

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.40...8.60

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Anaoid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1480...1510
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 6.30...6.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.50...11.70
2nd pressure hPa : 400
Rack travel in m: 13.30...13.50
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm3 : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 V 3
 Edition : 30.11.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 266
 Injection pump
 Pump designation : PES6MW100/320RS1185
 EP type number : 0 413 406 170
 Governor
 Governor design. : RGV350...1200MW46-35
 Governor no. : 0 420 083 229

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 186.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85
 : (3.70...3.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.80...9.20

2nd speed rpm : 1250
 travel mm : 7.90...8.10

3rd speed rpm : 550
 travel mm : 3.10...3.70

4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 800
 Aneroid pressure h: 900
 Del.quantity : 137.0...139.0
 1000 : (135.0...141.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:

1st rack travel in: 12.50
Speed rpm : 1280...1300
2nd rack travel in: 4.00
Speed rpm : 1415...1425
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 225
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.6060
2nd pressure hPa : 525
Rack travel in m: 12.30...12.70
3rd pressure hPa : 900
Rack travel in m: 13.50...13.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 134.0...138.0
1000 s: (132.0...140.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 62.5...64.5
1000 s: (60.5...66.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1280...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817113C91

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 V 2
Edition : 16.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 267
Injection pump
Pump designation : PES6MW100/320RS1185
EP type number : 0 413 406 170
Governor
Governor design. : RGV350...1200MW46-36
Governor no. : 0 420 083 230

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85
: (3.70...3.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.30...8.50

2nd speed rpm : 1460
travel mm : 9.10...9.50

3rd speed rpm : 550
travel mm : 3.10...3.70

4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 900
Del.quantity : 125.5...127.5
1000 : (123.5...129.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 97...105

Testing:

1st rack travel in: 11.70
Speed rpm : 1275...1295
2nd rack travel in: 4.00
Speed rpm : 1410...1420
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 280
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 500
Rack travel in m: 12.00...12.40
3rd pressure hPa : 900
Rack travel in m: 12.70...12.80

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm³/ : 124.5...128.5
1000 s: (122.5...130.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

M02

Speed rpm : 500
Del.quantity cm³/ : 71.5...73.5
1000 s: (69.5...75.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1275...1295

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817110C91

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 V 1
Edition : 16.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 268
Injection pump
Pump designation : PES6MW100/320RS1185
EP type number : 0 413 406 170
Governor
Governor design. : RQV350...1200MW46-37
Governor no. : 0 420 083 231

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 156.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85
: (3.70...3.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.0...6.2
Del.quantity cm3/ : 1.4...1.8
100 s: (1.1...2.0)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
travel mm : 8.30...8.50
2nd speed rpm : 1460
travel mm : 9.10...9.50
3rd speed rpm : 550
travel mm : 3.10...3.70
4th speed rpm : 350
travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 900
Del.quantity : 125.5...127.5
1000 : (123.5...129.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 97...105

Testing:

1st rack travel in: 11.70
Speed rpm : 1275...1295
2nd rack travel in: 4.00
Speed rpm : 1410...1420
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 360...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 180
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.10...8.20
2nd pressure hPa : 435
Rack travel in m: 11.40...11.80
3rd pressure hPa : 900
Rack travel in m: 12.70...12.80

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1200
Del.quantity cm3/ : 124.5...128.5
1000 s: (122.5...130.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 45.0...47.0
1000 s: (43.0...49.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1275...1295

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: IHC #1817111C91

Only perform pump setting with original
overflow valve without IH hose and
restrictor 1.2 mm diameter.
In unlatched condition, do not
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 99
 Edition : 30.11.90
 Replaces : 19.10.90
 Test oil : ISO-4113

Combination no. : 0 403 446 270

Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQV300...1300MW50-10
 Governor no. : 0 420 083 234

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.50...8.70

2nd speed rpm : 1450
 travel mm : 9.50...9.90

3rd speed rpm : 500
 travel mm : 2.70...3.30

4th speed rpm : 300
 travel mm : 1.20...1.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 900

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:

1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.9
Speed rpm : 300
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 800
Rack travel in m: 11.80...12.00
3rd speed rpm : 585
Rack travel in m: 12.30...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : 340
Rack travel in m: 10.30...10.40
2nd pressure hPa : 460
Rack travel in m: 11.20...11.50
3rd pressure hPa : 500
Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 75.5...78.5
1000 s: (73.0...81.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 900
Speed rpm : 585
Del.quantity cm3/ : 68.5...71.5
1000 s: (66.0...74.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 34.0...36.0
1000 s: (32.0...38.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 1
Edition : 23.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 272
Injection pump
Pump designation : PES6MW100/72ORS1131-1
EP type number : 0 413 406 165
Governor
Governor design. : RQ300/1300MW105-1
Governor no. : 0 420 082 048

Customer-spec. information
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 155.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1360

travel mm : 7.20...7.40

3rd speed rpm : 550

travel mm : 4.20...4.80

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: 105

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Setting point:
Speed rpm : 1200
Rack travel in mm : 15.5

Testing:
1st rack travel in: 12.20
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.20...11.30
2nd pressure hPa : 350
Rack travel in m: 12.50...12.80
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750

M08

Del.quantity cm3/ : 85.0...89.0
1000 s: (83.0...91.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 36.0...38.0
1000 s: (34.0...40.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 75
 Edition : 16.11.90
 Replaces : 06.09.90
 Test oil : ISO-4113
 Combination no. : 0 403 476 075
 Injection pump
 Pump designation : PES6MW100/720RS1130
 EP type number : 0 413 406 122
 Governor
 Governor design. : RSV350...750MWOA336-
 4
 Governor no. : 0 420 085 160

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 84.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.8

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 74...82

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755 *
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 61...69
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.80

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.80
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 74
 Edition : 16.11.90
 Replaces : 06.09.90
 Test oil : ISO-4113
 Combination no. : 0 403 476 078
 Injection pump
 Pump designation : PES6MM100/72ORS1129
 EP type number : 0 413 406 121
 Governor
 Governor design. : RSV350...750MWOA336-
 3
 Governor no. : 0 420 085 159

Customer-spec. information
 Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 94.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.50...12.60
 Del.quantity cm3/ : 8.5...8.7
 100 s: (8.3...8.9)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.8...6.8
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.6...1.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 85.0...87.0
 1000 : (83.0...89.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 74...82

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 11.50

Speed rpm : 750...755 *
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.80
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 Y
Edition : 19.10.90
Replaces : 31.07.90
Test oil : ISO-4113
Combination no. : 0 403 476 083
Injection pump
Pump designation : PES6MM100/320RS1200-1
EP type number : 0 413 406 194
Governor
Governor design. : RSV300...1100MWOA339-1
Governor no. : 0 420 085 140

Customer spec. information
Customer : MAN

Engine : D0826LE52/LUE51

1st version kW : 147.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 3.6...3.8
Del.quantity cm3/ : 0.6...1.0
100 s: (0.4...1.2)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1000
Del.quantity : 127.0...129.0
1000 : (125.0...131.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1380
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 3.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 3.60...3.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.50...11.60
2nd speed rpm : 600
Rack travel in m: 12.40...12.50
3rd speed rpm : 800
Rack travel in m: 12.00...12.20
4th speed rpm : 1000
Rack travel in m: 11.50...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : 210
Rack travel in m: 9.60...9.70
2nd pressure hPa : 570
Rack travel in m: 11.80...12.10
3rd pressure hPa : 1000
Rack travel in m: 12.40...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 133.0...136.0
1000 s: (130.5...138.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 133.0...136.0
1000 s: (130.5...138.5)
Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm3/ : 125.0...128.0
1000 s: (122.5...130.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 70.0...72.0
1000 s: (68.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.60...3.80
Del.quantity cm3/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7063
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 X
Edition : 14.09.90
Replaces : 03.08.90
Test oil : ISO-4113

Combination no. : 0 403 476 084

Injection pump
Pump designation : PES6MW100/32ORS1180-
1

EP type number : 0 413 406 193

Governor

Governor design. : RSV300...1100MWOA339
-2

Governer no. : 0 420 085 141

Customer-spec. information

Customer : MAN

Engine : D0826TUE51/130

1st version kW : 96.0

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 8.1...8.3

100 s: (7.9...8.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 0.6...1.0

100 s: (0.4...1.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 81.0...83.0

1000 : (79.0...85.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 7.50
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 4.00...4.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 8.50...8.60
2nd speed rpm : 1000
Rack travel in m: 8.60...8.80
3rd speed rpm : 800
Rack travel in m: 9.50...9.60
4th speed rpm : 600
Rack travel in m: 9.50...9.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.10...9.20

Measurement

Speed 1/min : 500

1st pressure hPa : 170
Rack travel in m: 9.20...9.30
2nd pressure hPa : 1000
Rack travel in m: 9.50...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1000
Del.quantity cm3/ : 81.0...83.0
1000 s: (78.5...86.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 88.5...91.5
1000 s: (86.0...94.0)
Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 83.0...86.0
1000 s: (80.5...88.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 70.0...72.0
1000 s: (68.0...74.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.00...4.20
Del.quantity cm3/ : 6.0...10.0
1000 s: (4.0...12.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7065
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 Q
Edition : 23.11.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 094
Injection pump
Pump designation : PES6MW100/320RS1132
EP type number : 0 413 406 124
Governor
Governor design. : RSV300...1050MW4A308
-5
Governor no. : 0 420 085 155

Customer-spec. information
Customer : PENTA

Engine : TD 61 ACE

1st version kw : 120.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
: (2.85...3.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 74...82

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 110...118

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.50...5.70

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 100.0...110.0

1000 s: (107.0...113.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.00...6.20

Del.quantity cm3/ : 12.0...16.0

1000 s: (9.5...18.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 2,6 a
Edition : 26.03.90
Replaces : 24.11.89
Test oil : ISO-4113

Combination no. : 9 400 083 422

Injection pump
Pump designation : PES3A80D320/3RS1264
EP type number : 9 400 083 053
Governor
Governor design. : RSV350...1200A2B627R
Governor no. : 9 420 082 194

Customer-spec. information
Customer : MWM

Engine : D225-3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.40...9.50

Del.quantity cm3/ : 5.0...5.1

100 s: (4.9...5.3)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 50.5...51.5

1000 : (49.0...53.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.40

Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.40...9.50

2nd speed rpm : 500

Rack travel in m: 9.40...9.60

5th speed rpm : 400

Rack travel in m: 10.60...11.20

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.90...6.10

Del.quantity cm³/ : 10.0...14.0

1000 s: (8.0...16.0)

Spread cm³ : 2.00

1000 s: (3.50)

Remarks:

:

APPLICATION

Navy

M20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 5,1 a
Edition : 26.03.90
Replaces : 24.11.89
Test oil : ISO-4113

Combination no. : 9 400 083 429

Injection pump
Pump designation : PES6A80D320/3RS1261
EP type number : 9 400 083 057
Governor
Governor design. : RSV350...900A7B627R
Governor no. : 9 420 082 193

Customer-spec. information
Customer : MWM

Engine : D225-6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 5.1...5.2

100 s: (5.0...5.4)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.7...1.1

100 s: (0.5...1.3)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 51.5...52.5

1000 : (50.0...54.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.20

Speed rpm : 940...945
2nd rack travel in: 4.00
Speed rpm : 975...980
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 10.20...10.40
5th speed rpm : 400
Rack travel in m: 11.40...12.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 940...945

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 7.0...11.0
1000 s: (5.0...13.0)
Spread cm³ : 2.00
1000 s: (3.50)

Remarks:

:

APPLICATION

Generator

M22

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a
Edition : 24.10.90
Replaces : 3.7.90
Test oil : ISO-4113

Combination no. : 9 400 083 449

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 9.30

Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.30...10.50
5th speed rpm : 400
Rack travel in m: 10.70...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 74.0...77.0
1000 s: (71.5...79.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a81
 Edition : 24.10.90
 Replaces : 26.3.90
 Test oil : ISO-4113

Combination no. : 9 400 083 449AB

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201

Cust. part no. : 3352892-VERSA001

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 125.1
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del. quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del. quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Testing:

1st rack travel in: 9.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
5th speed rpm : 400
Rack travel in m: 11.10...11.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a85
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449AG
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3353251-VERSA006

Customer spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 133.2
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.1...5.3
 Del. quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 82...90

Testing:

1st rack travel in: 9.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.40...11.60
4th speed rpm : 835
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 95.0...98.0
1000 s: (92.5...100.5)
Speed rpm : 700
Del.quantity cm3/ : 103.0...106.0
1000 s: (100.5...108.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

M28

Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a80
Edition : 24.10.90
Replaces : 26.3.90
Test oil : ISO-4113

Combination no. : 9 400 083 449AI

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Cust. part no. : 3352894-VERSA008

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 139.8
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 4.7...4.9
Del.quantity cm3/ : 0.8...1.2
100 s: (0.5...1.4)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Del.quantity : 105.0...107.0
1000 : (103.0...109.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:

1st rack travel in: 10.10
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1325...1355
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 61...69
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.30
5th speed rpm : 400
Rack travel in m: 11.50...12.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a86
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 44988
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3352898-VERSA011

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 l

1st version kW : 179.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 116.5...118.5

1000 : (114.5...120.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 86...94

Testing:
1st rack travel in: 11.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 565...625

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.50...12.70
4th speed rpm : 800
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 112.0...115.0
1000 s: (109.5...117.5)
Speed rpm : 700
Del.quantity cm³/ : 124.5...127.5
1000 s: (122.0...130.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

NO4

Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a79
Edition : 24.10.90
Replaces : 26.3.90
Test oil : ISO-4113

Combination no. : 9 400 083 449BC

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Cust. part no. : 3353232-VERSA012

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 154.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
Rack travel in mm : 5.1...5.3
Del.quantity cm3/ : 1.0...1.4
100 s: (0.7...1.6)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 86...94

Testing:

1st rack travel in: 11.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.40...12.50
2nd speed rpm : 500
Rack travel in m: 12.40...12.60
5th speed rpm : 400
Rack travel in m: 12.80...13.30

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a87
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449BD
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3354419-VERSA013

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 155.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm³/ : 1.6...2.0
 100 s: (1.4...2.3)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.0...108.0

1000 : (104.0...110.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:
1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 575...635

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
4th speed rpm : 950
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 123.0...127.0
1000 s: (121.0...129.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

N08

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a82
Edition : 24.10.90
Replaces : 26.3.90
Test oil : ISO-4113

Combination no. : 9 400 083 449CI

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A2C2209
R

Governer no. : 9 420 083 201

Cust. part no. : 3354421-VERSA028

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kw : 154.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 10.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 11.70...11.90
5th speed rpm : 400
Rack travel in m: 12.10...12.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8/3 a88
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449CJ
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3354437-VERSA029

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 132.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:

1st rack travel in: 9.40
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 10.40...10.60
5th speed rpm : 400
Rack travel in m: 10.80...11.30

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a89
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449DB
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3354685-VERSA031

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 129.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 1.4...1.8
 100 s: (1.1...2.0)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:

1st rack travel in: 9.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.10...10.20
2nd speed rpm : 500
Rack travel in m: 10.10...10.30
5th speed rpm : 400
Rack travel in m: 10.50...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 71.5...74.5
1000 s: (69.0...77.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a90
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 083 449DC
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100A2C2209
 R
 Governor no. : 9 420 083 201
 Cust. part no. : 3354686-VERSA032

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA - 8.3 L

1st version kW : 148.4
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 85...93

Testing:
1st rack travel in: 9.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.80...10.90
2nd speed rpm : 500
Rack travel in m: 10.80...11.00
5th speed rpm : 400
Rack travel in m: 11.20...11.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 81.0...84.0
1000 s: (78.5...86.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a91
 Edition : 24.10.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 083 450AH

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV375...1150A2C2210
 R
 Governor no. : 9 420 083 202

Cust. part no. : 3352889-VERSA007

Customer-spec. information
 Customer : CUMMINS

Engine : 6 C 8.3 L

1st version kW : 105.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del.quantity : 87.5...99.5

1000 : (85.5...91.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:

1st rack travel in: 9.40
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 375
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 475...535

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 10.40...10.60
5th speed rpm : 400
Rack travel in m: 10.80...11.30

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b12
Edition : 24.10.90
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 083 452CF
Injection pump
Pump designation : PES6A100D320/3RS2691
-2
EP type number : 9 410 230 028
Governor
Governor design. : RQV350...1250AB1225R
Governor no. : 9 420 080 224

Cust. part no. : 3353986-VERSA025

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3 L

1st version kW : 145.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.4...5.6
Del.quantity cm³/ : 1.4...1.8
100 s: (1.1...2.0)

Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1265
travel mm : 8.50...8.60
2nd speed rpm : 900
travel mm : 5.60...6.00
3rd speed rpm : 500
travel mm : 3.80...4.20
4th speed rpm : 350
travel mm : 1.60...2.50

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1300
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 105.5...107.5
1000 : (103.5...109.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 10.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack trave: 10.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 390...460

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.30...11.40
2nd speed rpm : 750
Rack travel in m: 12.00...12.10
4th speed rpm : 950
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 114.0...117.0
1000 s: (111.5...119.5)

BREAKAWAY

N20

1st version
1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 168.0...182.0
1000 s: (165.0...185.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 5,9 c
 Edition : 26.03.90
 Replaces : 4.85
 Test oil : ISO-4113
 Combination no. : 9 400 085 239
 Injection pump
 Pump designation : PES6A90D320RS2701
 EP type number : 9 400 083 094
 Governor
 Governor design. : RSV350...1150A2B2097
 Governor no. : 9 420 083 197

Customer-spec. information
 Customer : MWM

Engine : TD229-6

1st version kW : 106.7
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
 : (2.60...2.70)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 81.0...82.0

1000 : (79.0...84.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 93...101

Testing:

1st rack travel in: 9.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 67...75
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.80...10.90
2nd speed rpm : 500
Rack travel in m: 11.20...11.30
3rd speed rpm : 700
Rack travel in m: 11.20...11.30
4th speed rpm : 950
Rack travel in m: 11.00...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 74.5...76.5
1000 s: (72.0...79.0)
Speed rpm : 700
Del.quantity cm³/ : 77.0...79.0
1000 s: (74.5...81.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 2,9 a
 Edition : 26.03.90
 Replaces : 4.85
 Test oil : ISO-4113
 Combination no. : 9 400 085 241
 Injection pump
 Pump designation : PES3A90D32ORS2703
 EP type number : 9 400 083 096
 Governor
 Governor design. : RSV350...1150A2B2129
 -4R
 Governor no. : 9 420 083 193

Customer-spec. information
 Customer : MWM

Engine : D 229-3

1st version kW : 42.7
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
 : (2.60...2.80)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.1)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.9...1.7)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 58.0...59.0

1000 : (56.0...61.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 93...101

Remarks:

: VALMET

Testing:

1st rack travel in: 7.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 545...605

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 8.50...8.60
2nd speed rpm : 500
Rack travel in m: 9.40...9.50
4th speed rpm : 800
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 54.0...56.0
1000 s: (51.5...58.5)
Speed rpm : 800
Del.quantity cm3/ : 60.5...62.5
1000 s: (58.0...65.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

N24

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 n 25
 Edition : 26.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 247
 Injection pump
 Pump designation : PES6A90D410RS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RQV400...1400AB1214L
 Governor no. : 9 420 080 206

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 352 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 003
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 11.20...11.30
 Del.quantity cm3/ : 7.5...7.6
 100 s: (7.3...7.8)
 Spread cm3 : 0.3
 100 s: (0.5)
 2nd speed rpm : 400.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.9...1.7)
 Spread cm3 : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460
 travel mm : 8.40...8.60
 2nd speed rpm : 950
 travel mm : 5.20...5.50
 3rd speed rpm : 775
 travel mm : 4.10...4.60
 4th speed rpm : 550
 travel mm : 2.70...3.00
 5th speed rpm : 300
 travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1420
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Aneroid pressure h: 200
 Del.quantity : 75.5...76.5
 1000 : (73.5...78.5)
 Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:
1st rack travel in: 10.20
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 400
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 350...475

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 11.20...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.70
2nd pressure hPa : 115
Rack travel in m: 11.00...11.10
3rd pressure hPa : 90
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 200
Speed rpm : 500
Del.quantity cm3/ : 58.5...60.5
1000 s: (56.0...63.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 51.0...54.0
1000 s: (49.5...56.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 70.0...80.0
1000 s: (67.0...83.0)
Rack travel in mm : 13.80...14.20

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 11.5...15.5
1000 s: (9.5...17.5)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,9 a 1
Edition : 26.03.90
Replaces : 3.86
Test oil : ISO-4113
Combination no. : 9 400 085 268
Injection pump
Pump designation : PES4A90D320RS2702
EP type number : 9 400 083 095
Governor
Governor design. : RSV350...1150A2B2129
-7R
Governor no. : 9 420 083 212

Customer-spec. information
Customer : MWM

Engine : TD 229 EC-4

1st version kW : 66.2
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75
: (2.60...2.80)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.30...10.40

Del. quantity cm3/ : 7.7...7.8
100 s: (7.5...8.0)

Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 5.5...5.7
Del. quantity cm3/ : 1.1...1.5
100 s: (0.9...1.7)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 77.5...78.5
1000 : (75.5...80.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 94...102

Testing:
1st rack travel in: 9.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 545...605

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.80...10.90
4th speed rpm : 700
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 70.0...72.0
1000 s: (67.5...74.5)
Speed rpm : 700
Del.quantity cm3/ : 71.5...73.5
1000 s: (69.0...76.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:
: VALMET